

# Oceanside Key West

5950 Peninsular Avenue  
Stock Island, Florida

## LEVEL 3 TRAFFIC STUDY

prepared for:  
**Oceanside Investors, LLC**

**KBP CONSULTING, INC.**

May 2013

# Oceanside Key West

**5950 Peninsular Avenue  
Stock Island, Florida**

## **Level 3 Traffic Study**

**May 2013**

*Prepared for:*  
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## **INTRODUCTION**

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The existing Oceanside Marina is located at 5950 Peninsular Avenue on Stock Island in the Florida Keys, Monroe County, Florida. The subject site is approximately 19.84 acres and is located on the south (ocean) side of US 1 / Overseas Highway, near Mile Marker 5. A Project Location Map is presented in Figure 1 on the following page.

Oceanside Investors, LLC is proposing to redevelop and renovate portions of this site with expanded facilities, new land uses and updated / enhanced amenities. This development will be known as “Oceanside Key West” and a preliminary site plan for this project is included in Appendix A of this report.

KBP Consulting, Inc. has been retained by Oceanside Investors, LLC to prepare a traffic impact study for this project in accordance with the Monroe County Traffic Report Guidelines. This study addresses the anticipated trip generation and distribution characteristics of the project, the current and future operating conditions of nearby roadways / intersections, and project traffic impacts along US 1 / Overseas Highway by mile marker. A traffic analysis methodology meeting was held with Monroe County’s traffic engineering consultant and a summary of this discussion is presented in Appendix B<sup>1</sup>.

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<sup>1</sup> It should be noted that several of the existing and proposed land use descriptions and quantities have been revised and/or clarified since this discussion was held. The information presented within this traffic study reflects the most current proposed development program.



**Project Location Map**

**KBP**  
CONSULTING, INC.

**FIGURE 1**  
Oceanside Key West  
Stock Island, Florida

## INVENTORY

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### **Existing Land Uses and Access**

As mentioned previously, the size of the subject site is approximately 19.84 acres. The site currently consists of a marina with 104 wet slips and 171 dry slips, 22 residential condominium dwelling units, a building with 78 mini-storage units and approximately 8,055 square feet of light industrial uses, and a former (presently closed) restaurant site. Various marina related amenities are also provided on site including a dock-master, tackle shop, a bath house, dry dock and storage facilities, a marina store, and boat repair services.

Vehicular access to the existing Oceanside Marina is provided via Maloney Avenue which intersects with Peninsular Avenue on the north side of the site. Maloney Avenue is oriented in the northwest-southeast direction and ultimately provides access to US 1 / Overseas Highway by way of several local streets including MacDonald Avenue, 3<sup>rd</sup> Street and 5<sup>th</sup> Street.

### **Proposed Land Uses and Access**

The proposed redevelopment on this site will consist of a marina with 104 wet slips (i.e. no change in the number of wet slips) and 52 dry slips (i.e. 119 fewer dry slips), 78 new attached market-rate condominium dwelling units each with one lock-out for rental use<sup>2</sup> (the 22 existing residential condominium dwelling units will remain as is), five (5) hotel rooms, and a new 3,859 square foot quality restaurant. Various hotel and marina related amenities (or common areas) will be provided including a lobby and a pool for the use of guests. In addition, most of the existing marina amenities will be updated and renovated. Vehicular access to the site will be generally consistent with the current configuration. And, for the purposes of performing this traffic impact analysis, the project is planned to be completed by the year 2015.

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<sup>2</sup> Given that these 78 condominium dwelling units will each have a “lock-out” for possible rental use, the theoretical maximum number of “units” would be doubled to 156. Along with the 22 existing condominium dwelling units, this equates to 178 total dwelling units. For the purposes of this traffic impact analysis, this represents the most conservative (or “worst-case”) scenario.

## **EXISTING CONDITIONS**

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This section of the report addresses the existing roadway network in the project study area and the general traffic conditions.

### **Existing Roadway Network**

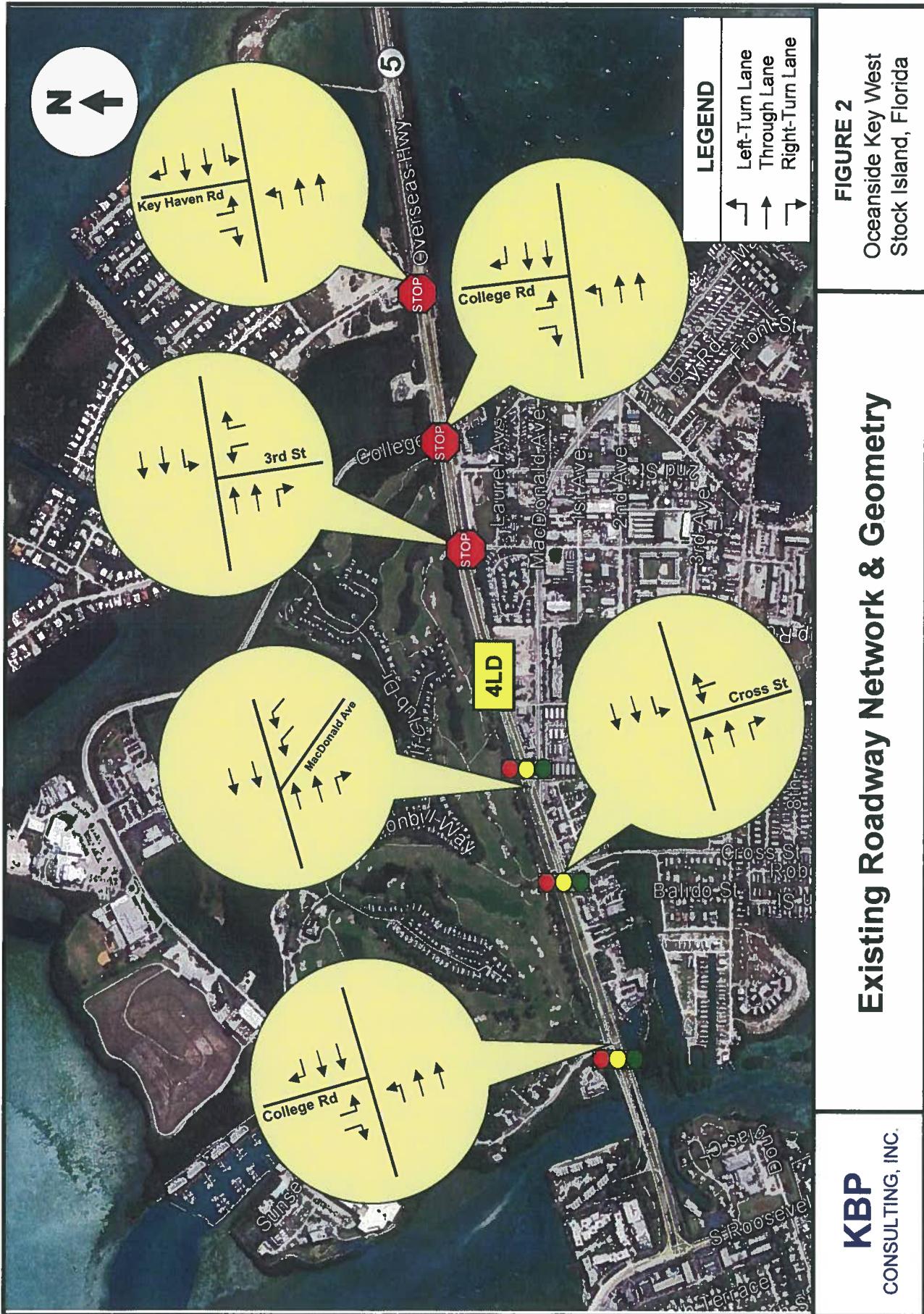
US 1 / Overseas Highway through the study area is a four-lane divided (4LD) principal arterial roadway. Based upon a review of the study area and discussions with the County's traffic engineering consultant, the following intersections along US 1 / Overseas Highway were selected to be evaluated:

- US 1 / Overseas Highway & Key Haven Road
- US 1 / Overseas Highway & College Road (East)
- US 1 / Overseas Highway & 3<sup>rd</sup> Street
- US 1 / Overseas Highway & MacDonald Avenue
- US 1 / Overseas Highway & Cross Street
- US 1 / Overseas Highway & College Road (West)

Figure 2 on the following page depicts the lane geometry and type of intersection control at each of the study intersections within the project study area.

### **Existing Traffic Conditions**

The Florida Department of Transportation (FDOT) collects and reports historical traffic data at four (4) traffic count stations within the proximity of the study area. Traffic volume data recorded over the past five (5) year period at these stations is summarized in Table 1 on page 6 of this report. This traffic data indicates generally steady to declining volumes in the immediate study area for the past five (5) year period (2007 to 2012). In order to present a conservative analysis, a background growth rate of 1.0% per year (compounded) has been applied for this traffic impact study. Appendix C contains the historical traffic data published by FDOT.



**Existing Roadway Network & Geometry**

**FIGURE 2**  
Oceanside Key West  
Stock Island, Florida

**KBP**  
CONSULTING, INC.

**Table 1**  
**Oceanside Key West**  
**Average Annual Daily Traffic (AADT) Volumes**  
**Stock Island, Florida**

Year	Average Annual Daily Traffic (AADT) Volumes			
	Station #900048	Station #900165	Station #900201	Station #900030
2012	9,600	36,564	37,500	2,900
2011	10,400	36,540	38,500	3,200
2010	10,200	36,027	35,500	3,800
2009	9,900	35,471	39,500	3,900
2008	10,200	34,602	48,500	3,600
2007	10,000	36,080	38,500	3,800

Station #900048 - MacDonald Avenue, 200 feet southeast of US 1

Station #900165 - US 1 200 feet east of Cow Key Bridge #00000170, Monroe County

Station #900201 - US 1 200 feet east of Cow Key Bridge @ R-165

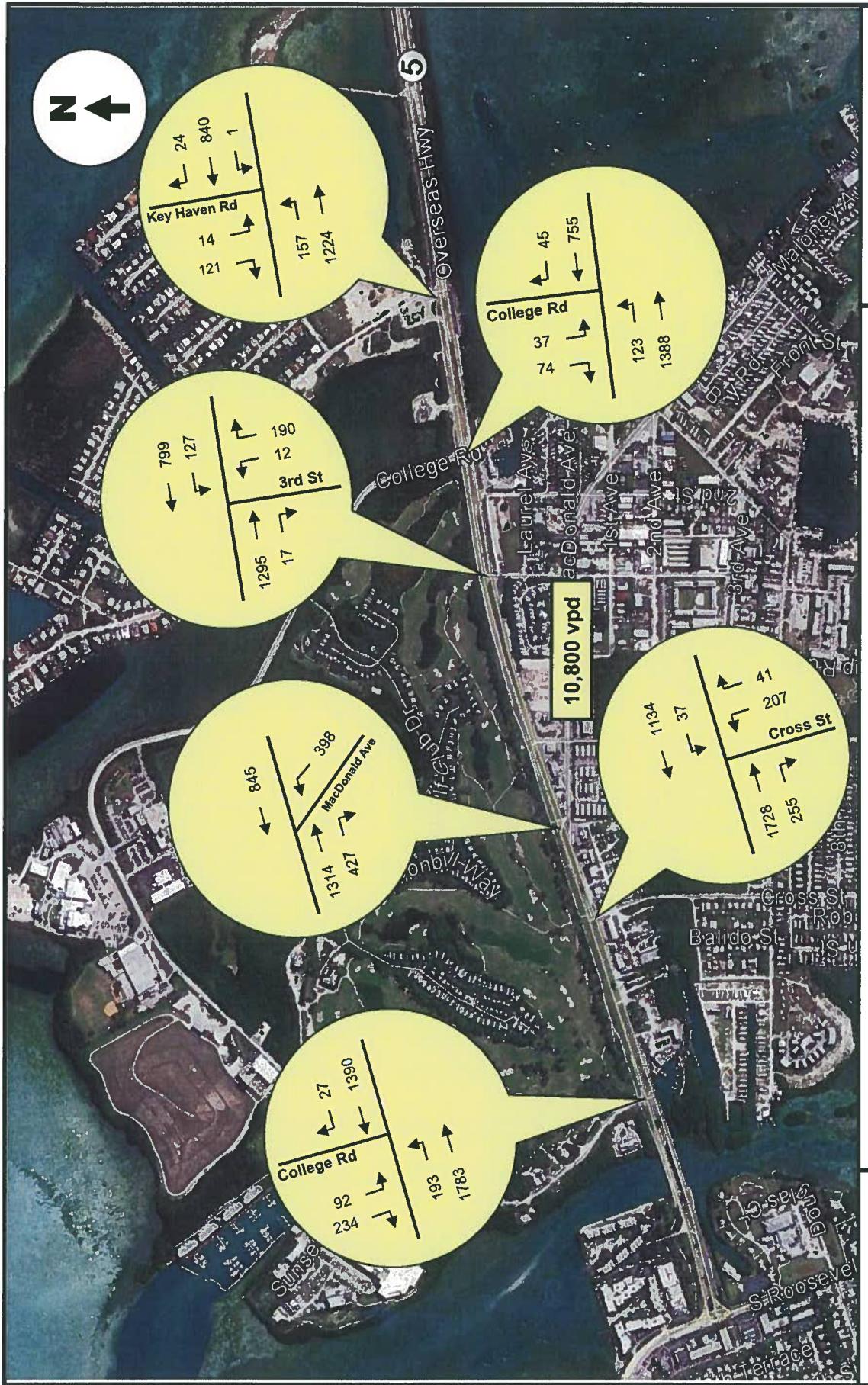
Station #900030 - College Road 200 feet north of US 1

*Source: Florida Department of Transportation  
Compiled by: KBP Consulting, Inc. (May 2013)*

KBP Consulting, Inc., in association with Crossroads Engineering Data, Inc., collected afternoon (4:00 PM – 6:00 PM) peak period turning movement counts at the following intersections on Wednesday, April 10, 2013:

- US 1 / Overseas Highway & Key Haven Road
- US 1 / Overseas Highway & College Road (East)
- US 1 / Overseas Highway & 3<sup>rd</sup> Street
- US 1 / Overseas Highway & MacDonald Avenue
- US 1 / Overseas Highway & Cross Street
- US 1 / Overseas Highway & College Road (West)

Two-day (48-hour) traffic counts were also collected on MacDonald Avenue to the east of US 1 / Overseas Highway. Figure 3 summarizes the existing (Year 2013) PM peak hour turning movement counts at these intersections and the daily average of the 48-hour counts collected on MacDonald Avenue. Appendix D contains the results of this traffic data collection effort.



### Existing (Year 2013) PM Peak Hour Traffic Counts

Source: Crossroads Engineering Data, Inc. April 10, 2013

**FIGURE 3**  
Oceanside Key West  
Stock Island, Florida

## TRIP GENERATION

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The trip generation for this project was determined using the trip generation information published in the Institute of Transportation Engineers' (ITE) *Trip Generation (9<sup>th</sup> Edition)* report. Based upon this information, the daily and PM peak hour trip generation rates for the existing and proposed redevelopment are as follows:

### **Marina (Wet Slips)<sup>3</sup> – ITE Land Use #420**

- Daily (wt. avg.) Trip Generation Rate:  $T = 3.49 (X)$   
*where T = number of trips and X = number of berths (or slips)*
- PM Peak Hour Trip Generation Rate:  $T = 0.19 (X)$  (60% in / 40% out)

### **Residential Condominium / Townhouse – ITE Land Use #230**

- Daily (wt. avg.) Trip Generation Rate:  $T = 5.65 (X)$   
*where T = number of trips and X = number of dwelling units*
- PM Peak Hour Trip Generation Rate:  $T = 0.52 (X)$  (67% in / 33% out)

### **Mini-Warehouse – ITE Land Use #151**

- Daily (wt. avg.) Trip Generation Rate:  $T = 0.23 (X)$   
*where T = number of trips and X = number of storage units*
- PM Peak Hour Trip Generation Rate:  $T = 0.02 (X)$  (48% in / 52% out)

### **General Light Industrial – ITE Land Use #110**

- Daily (wt. avg.) Trip Generation Rate:  $T = 5.26 (X)$   
*where T = number of trips and X = 1,000 SF of gross floor area*
- PM Peak Hour Trip Generation Rate:  $T = 0.97 (X)$  (12% in / 88% out)

### **Hotel – ITE Land Use #310**

- Daily (wt. avg.) Trip Generation Rate:  $T = 7.86 (X)$   
*where T = number of trips and X = number of rooms*
- PM Peak Hour Trip Generation Rate:  $T = 0.60 (X)$  (51% in / 49% out)

### **Quality Restaurant – ITE Land Use #931**

- Daily (wt. avg.) Trip Generation Rate:  $T = 88.04 (X)$   
*where T = number of trips and X = 1,000 SF of gross floor area*
- PM Peak Hour Trip Generation Rate:  $T = 7.49 (X)$  (67% in / 33% out)

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<sup>3</sup> Based upon research performed by others in the Florida Keys, the trip generation rates for dry boat slips are estimated to be one-half (1/2) of the wet boat slip trip generation rates.

The trip generation data published by ITE is presented in Appendix E. Table 2 below presents a summary of the trip generation analysis for the Oceanside Key West project.

Land Use	Size	Daily Trips	PM Peak Hour Trips		
			In	Out	Total
<b><i>Existing</i></b>					
Marina					
- Wet Slips	104 Berths	363	12	8	20
- Dry Slips	171 Berths	299	10	6	16
Condominium	22 D.U.	124	7	4	11
Mini-Warehouse	78 Units	18	1	1	2
Light Industrial	8,055 SF	42	1	7	8
<b>Sub Total</b>		<b>846</b>	<b>31</b>	<b>26</b>	<b>57</b>
<b><i>Proposed Redevelopment</i></b>					
Marina					
- Wet Slips	104 Berths	363	12	8	20
- Dry Slips	52 Berths	91	3	2	5
Condominium	178 D.U.	1,006	62	31	93
Hotel	5 Rooms	39	2	1	3
Quality Restaurant	3,859 SF	340	19	10	29
<b>Sub Total</b>		<b>1,839</b>	<b>98</b>	<b>52</b>	<b>150</b>
<b>Difference (Proposed - Existing)</b>		<b>993</b>	<b>67</b>	<b>26</b>	<b>93</b>

Compiled by: KBP Consulting, Inc. (May 2013).

Source: ITE Trip Generation Manual (9th Edition).

As indicated in Table 2, the proposed redevelopment and renovations at the Oceanside Key West marina is anticipated to generate 993 net new daily vehicle trips and 93 net new PM peak hour vehicle trips (67 inbound and 26 outbound). With 1,839 gross daily trips, a “Level 3” traffic study is required as per the Monroe County Traffic Report Guidelines Manual.

## **TRIP DISTRIBUTION**

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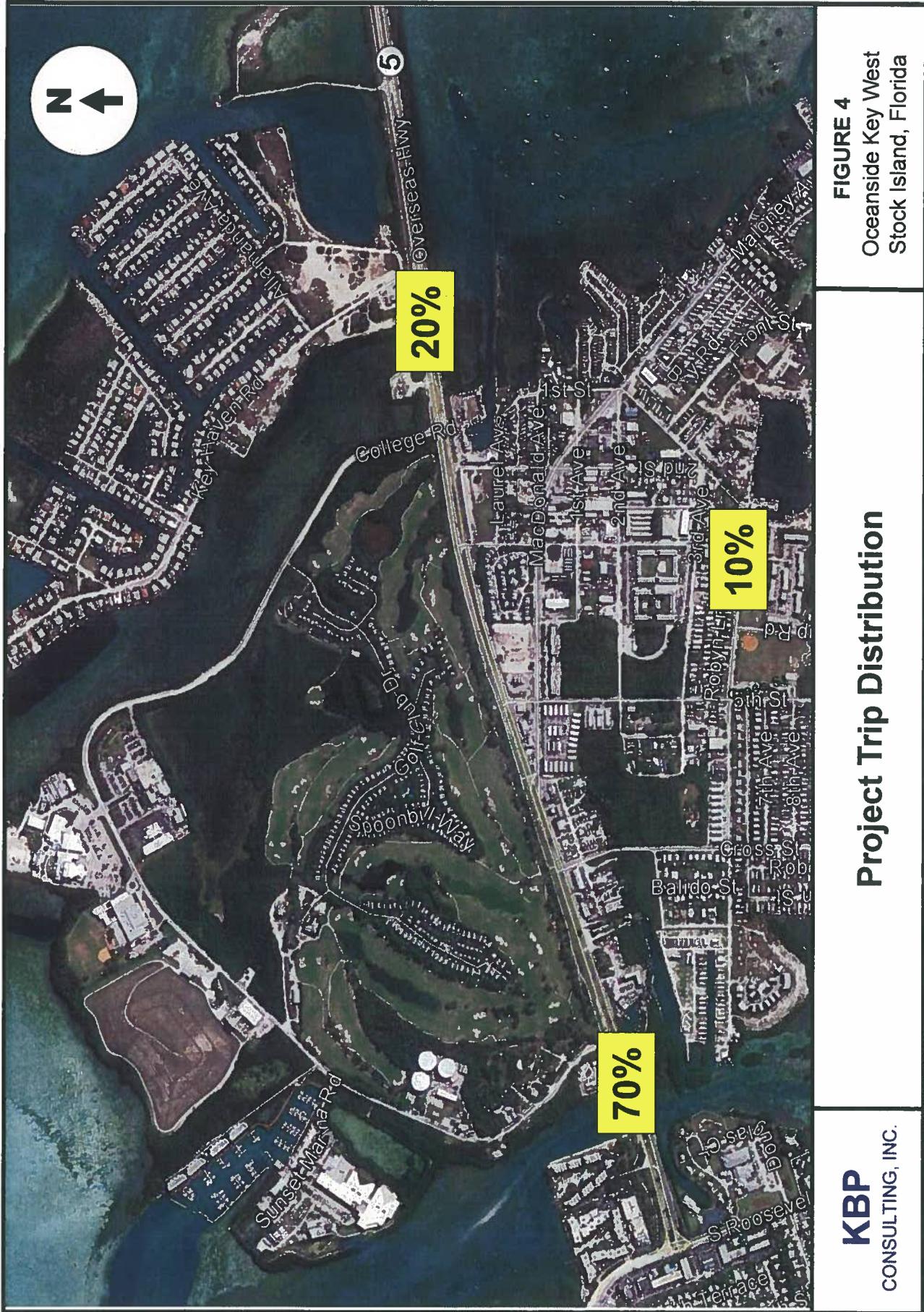
A trip distribution analysis was performed based on the nearby population areas (as documented in the Monroe County Traffic Report Guidelines Manual), the existing transportation network, the location of the subject project, and engineering judgment. Most of the project-related trips are anticipated to access US 1 / Overseas Highway. Table 3 below summarizes the anticipated trip distribution for the Oceanside Key West project. Figure 4 on the following page depicts the trip distribution in a graphical format.

**Table 3**  
**Oceanside Key West**  
**Project Trip Distribution**  
**Stock Island, Florida**

<b>Direction</b>	<b>Distribution (%)</b>
East (US 1 North)	20%
West (US 1 South)	70%
South Side of Stock Island (Local)	10%
North Side of Stock Island	0%

*Source: Based upon population data contained within the Monroe County Traffic Report Guidelines Manual.*

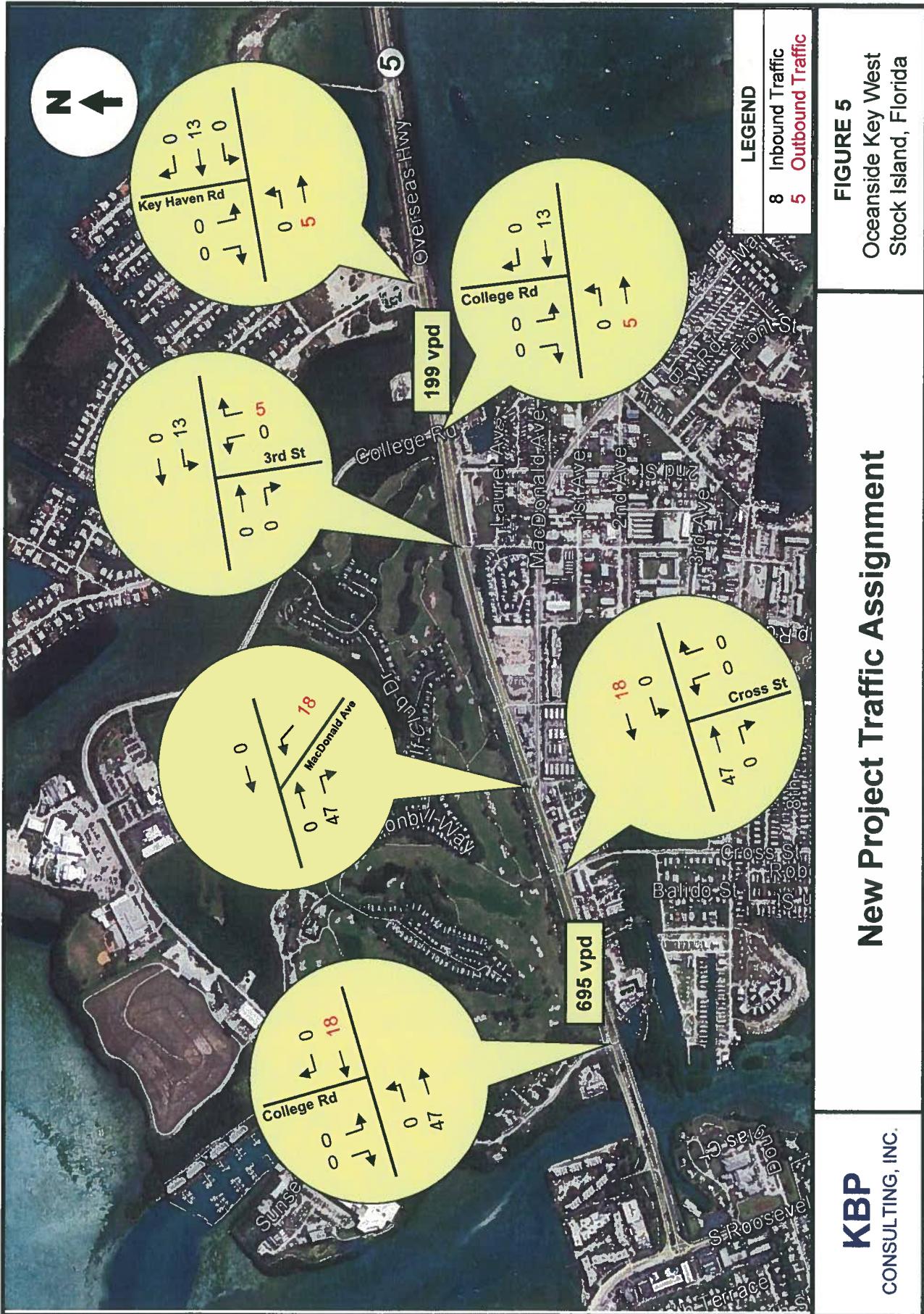
The net new daily and PM peak hour traffic generated by the project was assigned to the study area transportation network utilizing this trip distribution. The resulting project traffic assignment is summarized in Figure 5.



**Project Trip Distribution**

**FIGURE 4**  
Oceanside Key West  
Stock Island, Florida

**KBP**  
CONSULTING, INC.



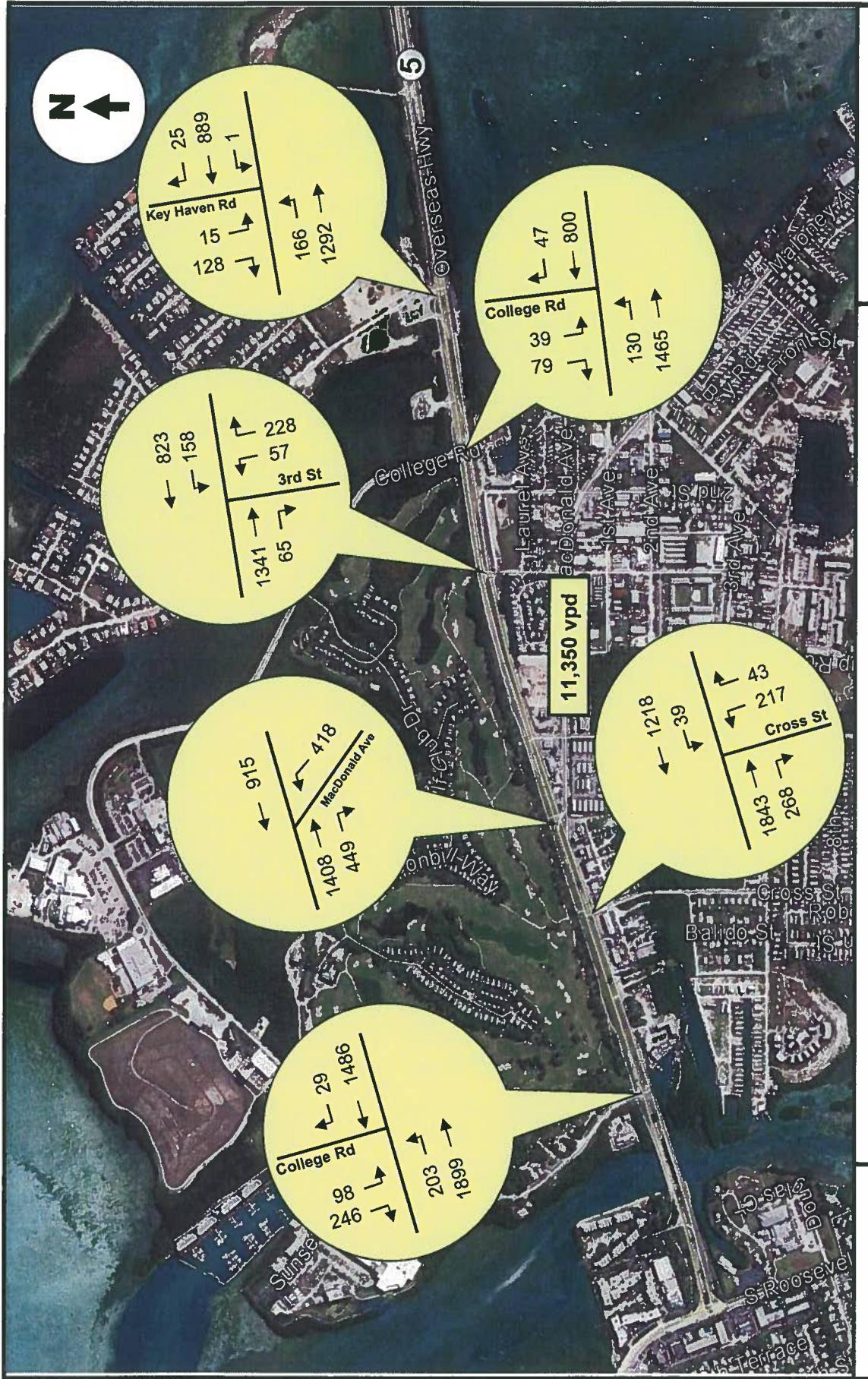
## FUTURE TRAFFIC VOLUMES

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This section of the report involves the development of future (2015) traffic volumes within the project study area both with and without the Oceanside Key West project traffic. The traffic volumes were developed in the following manner:

- **Average Peak Season Conversion Factor:** Traffic data collected on April 10, 2013 was reviewed with respect to average peak season conditions. FDOT's Peak Season Factor Category report (see Appendix F) was consulted for this analysis. The peak season adjustment factor reported for Monroe County for this time period (traffic counts collected between April 8<sup>th</sup> and April 14<sup>th</sup>) is 1.03.
- **Historic Traffic Growth:** As indicated in the Existing Conditions section of this report, historic FDOT traffic data for the project study area indicates generally steady to declining traffic volumes for the past five (5) year period (2007 to 2012). In order to present a conservative analysis, a background growth rate of 1.0% per year (compounded) has been applied for this traffic impact study.
- **Committed Projects:** During the previously referenced methodology meeting, it was agreed that the traffic associated with the recently approved but unconstructed CVS Pharmacy to be located on Stock Island should be considered in this analysis. The traffic report for the CVS Pharmacy project was obtained and the relevant intersection and roadway link traffic volumes are included in this analysis.

The future traffic calculations (including peak season adjustments, background traffic growth, committed traffic volumes associated with the CVS Pharmacy, and the traffic associated with the Oceanside Key West project) for the study intersections are contained in Appendix G in tabular format. Figure 6 includes future background traffic only (without the proposed Oceanside Key West project) and Figure 7 includes the additional traffic anticipated to be generated by the Oceanside Key West project.



**FIGURE 6**  
Oceanside Key West  
Stock Island, Florida

**Future (2015) Background (w/out Project)  
PM Peak Hour Traffic Volumes**

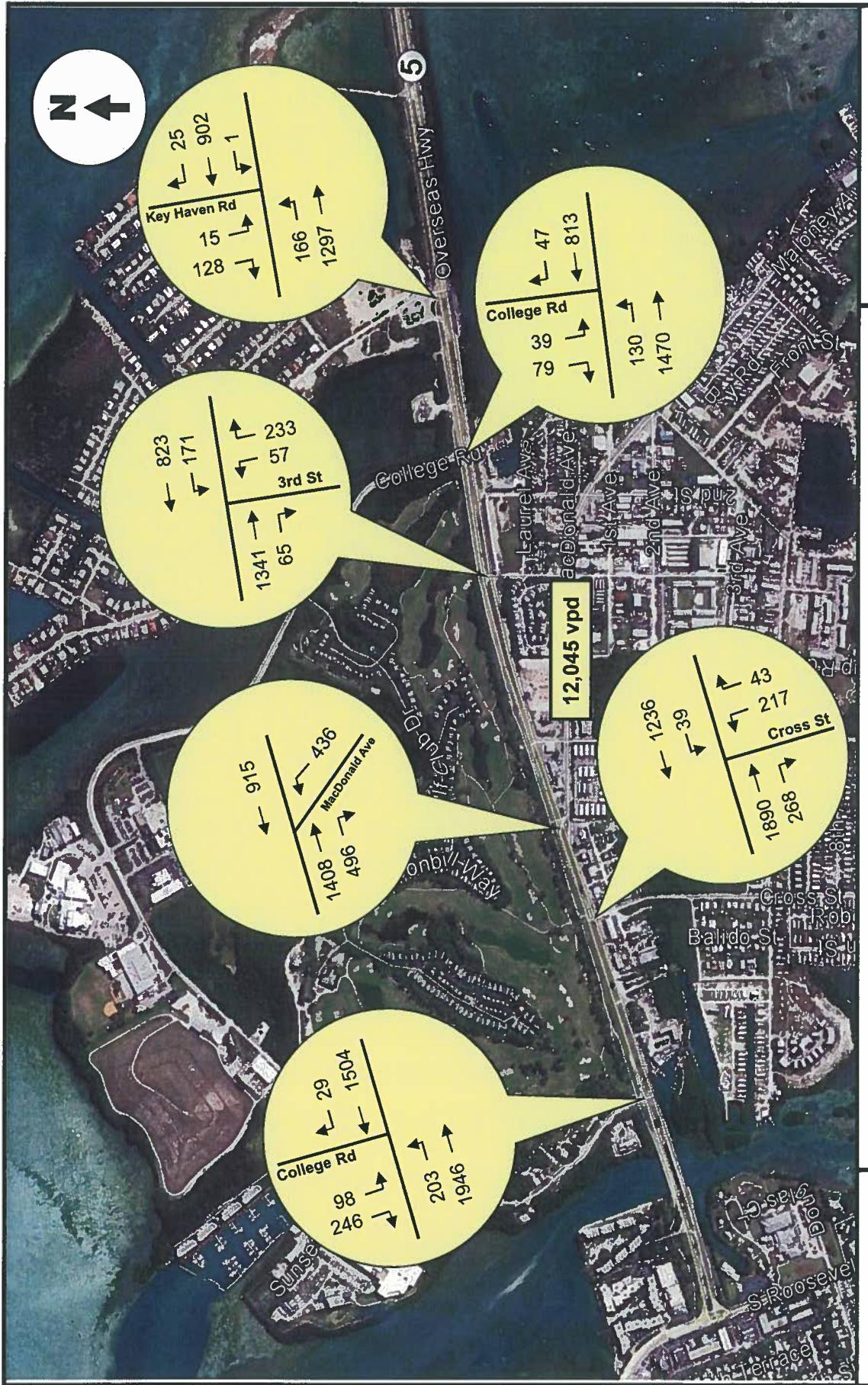


FIGURE 7  
Oceanside Key West  
Stock Island, Florida

**Future (2015) Total (w/Project)  
PM Peak Hour Traffic Volumes**

## TRAFFIC IMPACT ANALYSIS

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This section of the traffic report is divided into three parts: 1) intersection analyses, 2) link analysis, and 3) impacts to US 1 / Overseas Highway by mile marker.

### Intersection Analyses

Intersection capacity/level of service (LOS) analyses were conducted for the six (6) study intersections for existing conditions (2013), future background conditions (2015) without project traffic, and future conditions (2015) with project traffic. These analyses were undertaken following the capacity / level of service procedures outlined in the Highway Capacity Manual (HCM) using the SYNCHRO software. The results of these capacity analyses are summarized in Table 4 below.

Table 4 Oceanside Key West Intersection Levels of Service Stock Island, Florida			
Intersection	Existing (2013) PM Peak Hour Conditions	Future (2015) Without Project Traffic PM Peak Hour Conditions	Future (2015) With Project Traffic PM Peak Hour Conditions
US 1 / Key Haven Road *	SB Approach: B (11.9)	SB Approach: B (11.7)	SB Approach: B (11.8)
US 1 / College Road (East) *	SB Approach: B (13.2)	SB Approach: B (11.8)	SB Approach: B (12.9)
US 1 / 3rd Street *	NB Approach: B (14.9)	NB Approach: C (17.2)	NB Approach: C (17.5)
US 1 / MacDonald Avenue **	B (12.8)	B (12.8)	B (13.0)
US 1 / Cross Street **	B (14.6)	B (15.1)	B (15.6)
US 1 / College Road (West) **	C (21.6)	C (21.4)	C (21.9)

Source: Highway Capacity Manual and SYNCHRO.

Legend: C (21.4) = LOS (Average Delay in Seconds / Vehicle)

\* At stop-control intersections, the LOS on the critical side street is documented in this table.

\*\* At signalized intersections, the LOS for the intersection as a whole is documented in this table.

As indicated in Table 4 above, each of the study intersections is currently operating at an acceptable Level of Service (LOS) and they are expected to continue operating at an acceptable LOS in the project design year (2015) both with and without the Oceanside Key West project traffic. Signal timing data obtained from Monroe County for the signalized intersections is presented in Appendix H and the SYNCHRO output for the intersection analyses is presented in Appendix I.

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## **Link Analysis**

The link analysis compares the maximum number of reserve trips on US 1 / Overseas Highway through the Stock Island area (per Monroe County's Level of Service and Reserve Capacity Table) with the project's traffic impacts. Based upon a 70% / 20% / 10% trip distribution, the project will add a maximum of 695 daily trips (70% of the additional 993 daily trips) to Segment Number 1 (Stock Island). Based upon a review of the traffic study prepared for the aforementioned CVS Pharmacy to be located on Stock Island, the maximum traffic impact of this project on Segment Number 1 is 441 trips. This is based upon 630 primary trips to be generated by the CVS Pharmacy and a 70% / 20% / 10% trip distribution. Therefore, the total impact of these two projects on Segment Number 1 is 1,136 trips.

According to Monroe County's Level of Service and Reserve Capacity Table (see Appendix J), Segment Number 1 has a maximum reserve volume of 1,822 trips. Therefore, US 1 / Overseas Highway through Stock Island has excess capacity to absorb the maximum impacts generated by the Oceanside Key West project.

Daily traffic counts were also performed on MacDonald Avenue for the purposes of assessing this roadway's level of service. These counts revealed an average daily volume of approximately 10,800 vehicles. When adjusting for the peak season (1.03) and historic background growth of 1.0% per year compounded annually, the future (2015) background traffic volume on MacDonald Avenue east of US 1 / Overseas Highway is projected to be approximately 11,350. The Oceanside Key West project is projected to add 695 daily trips to this roadway resulting in a future daily volume of approximately 12,045 vehicles. The posted speed limit on this roadway is 25 miles per hour (mph) and, according to the FDOT's 2012 Quality / Level of Service Handbook, the maximum daily LOS D volume for Class II urban signalized arterials (with a non-state roadway adjustment of -10%) is 13,320 vehicles. As a result, this roadway will operate at an acceptable LOS with the project in place.

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### **US 1 / Overseas Highway Impacts by Mile Marker**

For this project, it was assumed that the typical maximum trip length will be approximately 5 miles to the west (to Key West) and 50 miles to the east (toward Marathon). The average trip length was assumed to be one-half (1/2) of the maximum trip length in either direction, or 3 miles to the west and 25 miles to the east. Based upon these trip length assumptions, the US 1 / Overseas Highway segments identified in Monroe County's Traffic Report Guidelines, and the traffic assignment discussed previously, an estimate of the number of primary trips by segment on US 1 / Overseas Highway was performed. Table 5 summarizes the number of primary trips by segment on US 1/ Overseas Highway (Arterial Trip Assignment). As indicated in this table, this project will add approximately 993 daily trips.

Table 5 Oceanside Key West Arterial Trip Assignment Summary (US 1 / Overseas Highway) Stock Island, Florida		
<b>Project:</b> Oceanside Key West	US 1	
	<b>Mile Marker:</b>	5
<b>Location:</b> Stock Island	ITE	
	<b>Land Use</b>	
	<b>Category:</b>	420, 230, 310 & 931
<b>Type of Development:</b> Marina	Daily Trip	
Residential & Hotel	Generation	
Restaurant	Rate / Formula:	
		Marina (Wet): T = 3.49 (X)
		Marina (Dry): T = 1.75 (X)
<b>Project Size:</b>	104 Wet Slips (104 Existing Wet Slips)	Condominium: T = 5.65 (X)
	52 Dry Slips (171 Existing Dry Slips)	Hotel: T = 7.86 (X)
	178 Condominium Dwelling Units (22 Existing Units)	Restaurant: T = 88.04 (X)
	5 Hotel Rooms	
	3,859 SF Quality Restaurant	
<b>Average Trip Length:</b> 3 Miles South / 25 Miles North		

Total Daily Trips	Percent Primary Trips	US 1 Segment Number	Percent Directional Split	% Impact Based On Trip Length	Project Generated Daily Trips	CVS Pharmacy Trips	Total (Oceanside & CVS)	2012 Reserve Capacity
993	100%	1	70% / 20% / 10%	100%	695	441	1,136	1,822
		2	20%	90%	179	115	294	4,779
		3	20%	80%	159	101	260	373
		4	20%	75%	149	82	231	2,881
		5	20%	60%	119	57	176	1,938
		6	20%	50%	99	41	140	1,822
		7	20%	40%	79	29	108	1,530
		8	20%	30%	60	18	78	2,019
		9	20%	20%	40	7	47	2,400
		10	20%	10%	20	0	20	1,182
		11	20%	0%	0	0	0	6,839

Sources: Monroe County Planning Department.

Compiled by: KBP Consulting, Inc. (May 2013).

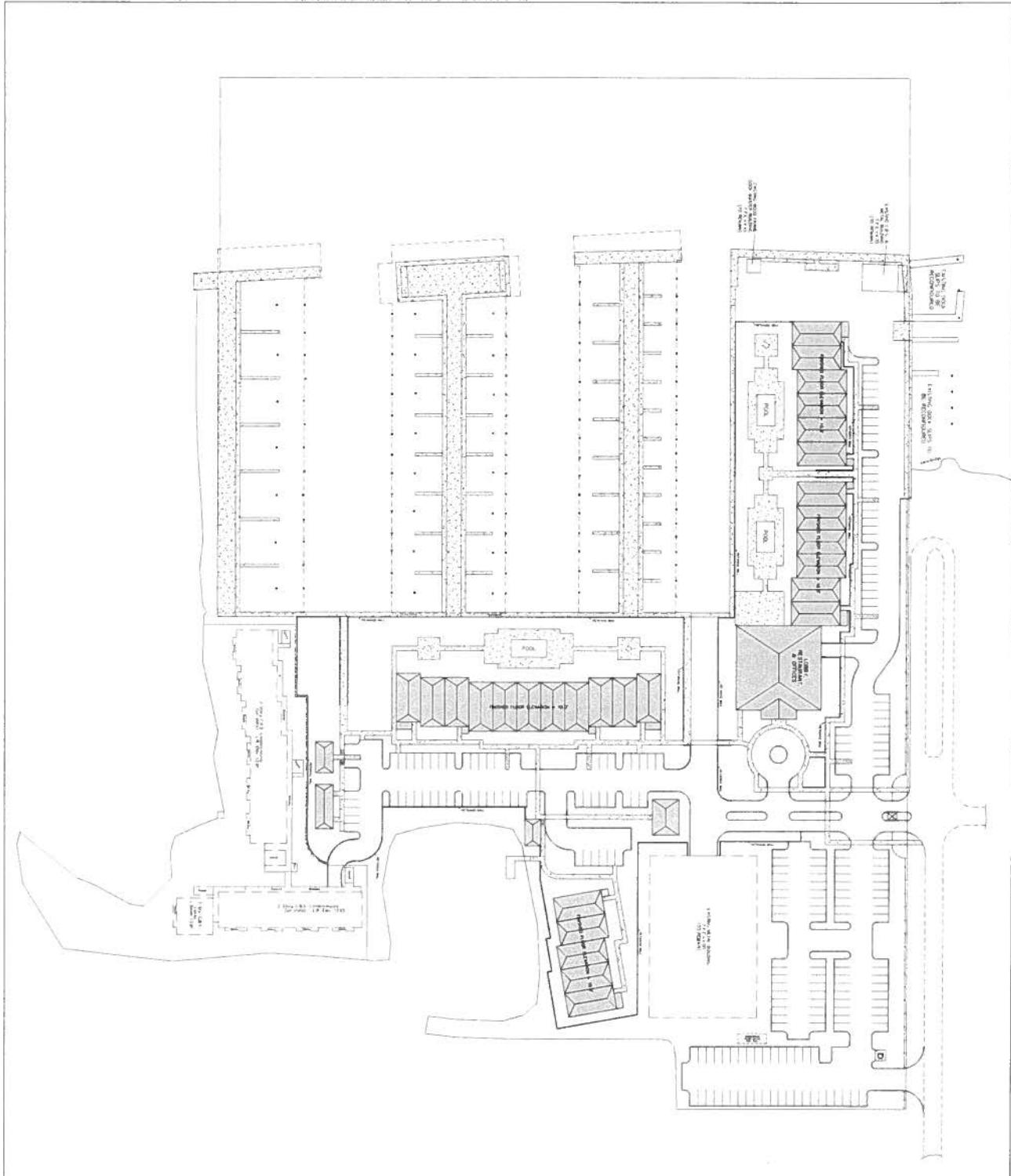
## **SUMMARY & CONCLUSIONS**

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Based upon the results of the traffic analyses performed for the Oceanside Key West project, the proposed redevelopment will not have an adverse impact on the operating characteristics of US 1 / Overseas Highway, nor will it inhibit the safe flow of traffic traveling through Stock Island. US 1 / Overseas Highway and the study intersections have adequate capacity to accommodate the traffic volumes generated by the project.

# **Appendix A**

## **Oceanside Key West Preliminary Site Plan**



Description	Revisions
SITE PLAN	1
CONCEPTUAL	
CONCEPT ONLY	
CONSTRUCTION	

CONCEPTUAL SITE PLAN  
for  
OCEANSIDE RESORT & MARINA

WEI essence in engineering  
201 W. MARION AVE. SUITE 1306  
PUNTA GORDA, FLORIDA 33950  
941.505.1700

Approved By	Design	INB
Scale	1" = 50'	Draft
Job No.	13366-001	Checkered
Date Issued	5/16/2013	MJC
EB #	6656	

## **Appendix B**

### **Summary of Traffic Analysis Methodology Teleconference**

# KBP CONSULTING, INC.

## MEMORANDUM

To: Raj Shanmugam, P.E.  
URS

From: Karl B. Peterson, P.E.  
Ken Braverman

Date: April 3, 2013

Subject: Oceanside Key West  
Traffic Analysis Methodology Meeting

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Oceanside Key West is a proposed mixed-use development to be located at 5950 Peninsula Avenue on Stock Island, Monroe County, Florida. The following is a brief summary of the traffic analysis methodology meeting that was held via telephone earlier today.

### Development

#### **Existing:**

- Marina
  - 120 wet slips
  - 38 dry slips
  - Plus various amenities
- A former restaurant
- 22 condominium units

#### **Proposed:**

- Marina
  - 15 new wet slips
- 78 condominium units
- 5 hotel units
  - Ability to create up to 161 “hotel rooms”
- 3,859 SF (+/-) restaurant (replacement of existing)
- Updated and modernized amenities

### Traffic Study

Based upon the information presented above, it is evident that a Level 3 Monroe County traffic analysis will be required.

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# KBP CONSULTING, INC.

## Potential Intersections to be Evaluated

- US 1 / Overseas Highway & Key Haven Road
- US 1 / Overseas Highway & College Road
- US 1 / Overseas Highway & 3<sup>rd</sup> Street
- US 1 / Overseas Highway & McDonald Avenue
- US 1 / Overseas Highway & Cross Street
- US 1 / Overseas Highway & College Road
- US 1 / Overseas Highway & Roosevelt Boulevard

## Other Projects to be Considered

The CVS Pharmacy project to be located on US 1 / Overseas Highway between 2<sup>nd</sup> Street and 3<sup>rd</sup> Street and should be included in this analysis.

## Neighborhood Traffic

Consideration should be given to evaluating the intersection of McDonald Avenue and 3<sup>rd</sup> Street.

## McDonald Avenue

24 hour counts should be collected on McDonald Avenue in the vicinity of US 1 / Overseas Highway. The capacity of this roadway should be evaluated on a daily basis.

## Trip Generation

We have the option of utilizing the ITE Trip Generation manual and / or field observations for existing development on the site. If field observations are utilized, care should be taken to ensure that the subject land use is fully functional and 100% occupied.

## **Appendix C**

### **FDOT – Historic Traffic Count Data**

FLORIDA DEPARTMENT OF TRANSPORTATION  
 TRANSPORTATION STATISTICS OFFICE  
 2012 HISTORICAL AADT REPORT

COUNTY: 90 - MONROE

SITE: 0030 - COLLEGE RD, 200' N SR 5/US-1/OVERSEAS

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2012	2900 C	N 1500	S 1400	9.50	55.00	8.20
2011	3200 C	N 1600	S 1600	9.50	55.10	8.30
2010	3800 C	N 2000	S 1800	10.26	56.84	10.30
2009	3900 C	N 1700	S 2200	10.23	56.56	8.40
2008	3600 C	N 2000	S 1600	10.45	54.98	8.60
2007	3800 C	N 1700	S 2100	10.00	55.10	9.80
2006	4100 C	N 2300	S 1800	10.08	55.69	12.30
2005	5400 C	N 3100	S 2300	10.40	55.70	4.20
2004	6200 C	N 3400	S 2800	10.00	56.00	3.10
2003	7300 C	N	S	10.10	56.30	4.40
2002	6100 C	N 2900	S 3200	10.00	54.20	5.60
2001	6200 C	N	S	10.00	55.90	6.80
2000	6700 C	N 3600	S 3100	9.90	54.80	6.60
1999	6500 C	N	S	9.50	56.70	4.80
1998	7500 C	N	S	9.50	56.60	2.80
1997	5200 C	N	S	9.60	55.90	3.70

AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE  
 S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; X = UNKNOWN

\*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

FLORIDA DEPARTMENT OF TRANSPORTATION  
 TRANSPORTATION STATISTICS OFFICE  
 2012 HISTORICAL AADT REPORT

COUNTY: 90 - MONROE

SITE: 0048 - MACDONALD AV, 200' SE SR 5/US-1(STOCK ISL)

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2012	9600 C	N 4400	S 5200	9.00	55.00	8.20
2011	10400 C	N 5300	S 5100	9.00	55.10	8.30
2010	10200 C	N 4800	S 5400	10.26	56.84	10.30
2009	9900 C	N 5000	S 4900	10.23	56.56	8.40
2008	10200 C	N 4700	S 5500	10.45	54.98	8.60
2007	10000 C	N 5000	S 5000	10.00	55.10	9.80
2006	9200 C	N 4300	S 4900	10.08	55.69	12.30
2005	10200 C	N 4900	S 5300	10.40	55.70	6.20
2004	13500 C	N 5900	S 7600	10.00	56.00	3.10
2003	11500 C	N	S	10.10	56.30	4.40
2002	11400 C	N 5600	S 5800	10.00	54.20	5.60
2001	12000 C	N	S	10.00	55.90	6.80
2000	10900 C	N 5400	S 5500	9.90	54.80	6.60
1999	12500 C	N	S	9.50	56.70	4.80
1998	11000 C	N	S	9.50	56.60	2.80
1997	9700 C	N	S	9.60	55.90	3.70

AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE  
 S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; X = UNKNOWN  
 \*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

FLORIDA DEPARTMENT OF TRANSPORTATION  
 TRANSPORTATION STATISTICS OFFICE  
 2012 HISTORICAL AADT REPORT

COUNTY: 90 - MONROE

SITE: 0165 - SR-5/US-1, 200' E COW KEY BRDG#00000170, MONROE CO.

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2012	36564 C	N 18323	S 18241	9.00	55.10	4.00
2011	36540 C	N 18298	S 18242	9.00	55.60	3.90
2010	36027 C	N 17980	S 18047	9.71	56.29	3.80
2009	35471 C	N 17672	S 17799	9.59	58.14	4.10
2008	34602 C	N 17266	S 17336	10.14	56.24	8.60
2007	36080 C	N 18055	S 18025	9.60	57.50	6.60
2006	36598 C	N 18353	S 18245	9.61	57.90	7.40
2005	37137 C	N 18583	S 18554	9.40	58.50	5.50
2004	37926 C	N 19091	S 18835	9.40	58.50	7.30
2003	37403 C	N 19079	S 18324	9.60	56.70	6.60
2002	37478 C	N 18912	S 18566	9.60	56.40	6.20
2001	37401 C	N 18863	S 18538	9.60	57.60	6.00
2000	35472 C	N 18190	S 17282	9.60	56.80	6.10
1999	29838 C	N 16018	S 13820	8.20	57.40	4.60
1998	28452 C	N 15434	S 13018	8.20	60.20	4.00
1997	29201 C	N 15727	S 13474	8.10	58.80	4.90

AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE  
 S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; X = UNKNOWN  
 \*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

FLORIDA DEPARTMENT OF TRANSPORTATION  
 TRANSPORTATION STATISTICS OFFICE  
 2012 HISTORICAL AADT REPORT

COUNTY: 90 - MONROE

SITE: 0201 - SR 5/US-1, 200' E COWKEY CHANNEL BRIDG @ R-165

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2012	37500 C	W 19500	E 18000	9.00	55.00	5.40
2011	38500 C	W 18500	E 20000	9.00	55.10	5.50
2010	35500 C	W 18000	E 17500	10.26	56.84	11.70
2009	39500 C	W 20500	E 19000	10.23	56.56	5.20
2008	48500 C	N 25500	S 23000	10.45	54.98	8.60
2007	38500 C	N 20500	S 18000	10.00	55.10	9.80
2006	45500 C	N 23500	S 22000	10.08	55.69	12.30
2005	43500 C	N 22000	S 21500	10.40	55.70	3.10
2004	41500 C	N 21000	S 20500	10.00	56.00	3.10
2003	44000 C	N 21500	S 22500	10.10	56.30	4.40
2002	30000 C	N 15000	S 15000	10.00	54.20	5.60
2001	42000 C	N 21000	S 21000	10.00	55.90	6.80
2000	22500 C	N 11000	S 11500	9.90	54.80	6.60
1999	40000 C	N 18500	S 21500	9.50	56.70	4.80
1998	35500 C	N 18000	S 17500	9.50	56.60	2.80
1997	39500 C	N 19500	S 20000	9.60	55.90	3.70

AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE  
 S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; X = UNKNOWN  
 \*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

## **Appendix D**

### **2013 Traffic Counts**

**Crossroads Engineering**  
 13284 SW 120th Street  
 Miami, Florida, 33186  
 TEL: 305-233-3997 FAX: 305-233-7720

**CLIENT : KBP CONSULTING**  
**JOB NO : 2013-024**  
**PROJECT : STOCK ISLAND COUNTS**  
**COUNTY : MONROE**

File Name : keyhaven@us1  
 Site Code : 00000000  
 Start Date : 4/10/2013  
 Page No : 1

#### Groups Printed- HEAVY VEHICLES

	KEY HAVEN RD					KEY HAVEN RD					US 1						
	From North			From South		From East			Thru		Left		Peds		Right		From West
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	26	0	2	1	8	220	0	0	0	0	0	0	0	105	5	0	367
07:15 AM	42	0	3	1	4	349	0	0	0	0	0	0	0	104	9	0	512
07:30 AM	48	0	4	2	4	396	0	0	0	0	0	0	0	136	13	0	603
07:45 AM	47	0	3	0	7	354	0	0	0	0	0	0	0	148	14	0	573
Total	163	0	12	4	23	1319	0	0	0	0	0	0	0	493	41	0	2055
08:00 AM	10	0	0	0	3	330	0	0	0	0	0	0	0	149	18	0	510
08:15 AM	37	0	4	0	8	230	0	0	0	0	0	0	0	138	24	0	441
08:30 AM	25	0	4	2	6	236	0	0	0	0	0	0	0	145	18	0	436
08:45 AM	32	0	4	1	7	240	0	0	0	0	0	0	0	157	22	0	463
Total	104	0	12	3	24	1036	0	0	0	0	0	0	0	389	82	0	1850

\*\*\* BREAK \*\*\*

	Right	Thru	Left	Peds	Int. Total												
04:00 PM	23	0	10	1	10	233	0	0	0	0	0	0	0	0	0	0	545
04:15 PM	23	0	3	4	8	214	0	0	0	0	0	0	0	231	34	2	519
04:30 PM	22	0	3	0	4	258	0	0	0	0	0	0	0	265	30	0	582
04:45 PM	27	0	4	3	5	190	0	0	0	0	0	0	0	312	45	0	586
Total	95	0	20	8	27	895	0	0	0	0	0	0	0	1035	150	2	2232
05:00 PM	33	0	4	1	7	227	1	0	0	0	0	0	0	0	0	0	640
05:15 PM	39	0	3	1	8	165	0	0	0	0	0	0	0	323	39	0	578
05:30 PM	18	0	2	1	12	157	0	0	0	0	0	0	0	279	62	0	531
05:45 PM	34	0	10	0	4	163	0	0	1	0	0	0	0	223	43	0	478
Total	124	0	19	3	31	712	1	0	1	0	0	0	0	1149	187	0	2227
Grand Total	486	0	63	18	105	3962	1	0	1	0	0	0	0	3266	460	2	8364
Apprch %	85.7	0	11.1	3.2	2.6	97.4	0	0	100	0	0	0	0	87.6	12.3	0.1	
Total %	5.8	0	0.8	0.2	1.3	47.4	0	0	0	0	0	0	0	39	5.5	0	

**Crossroads Engineering**  
 13284 SW 120th Street  
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**CLIENT : KBP CONSULTING**  
**JOB NO : 2013-024**  
**PROJECT : STOCK ISLAND COUNTS**  
**COUNTY : MONROE**

File Name : keyhaven@us1  
 Site Code : 00000000  
 Start Date : 4/10/2013  
 Page No : 4

**KEY HAVEN RD**

From North

US 1

From East

KEY HAVEN RD

From South

US 1

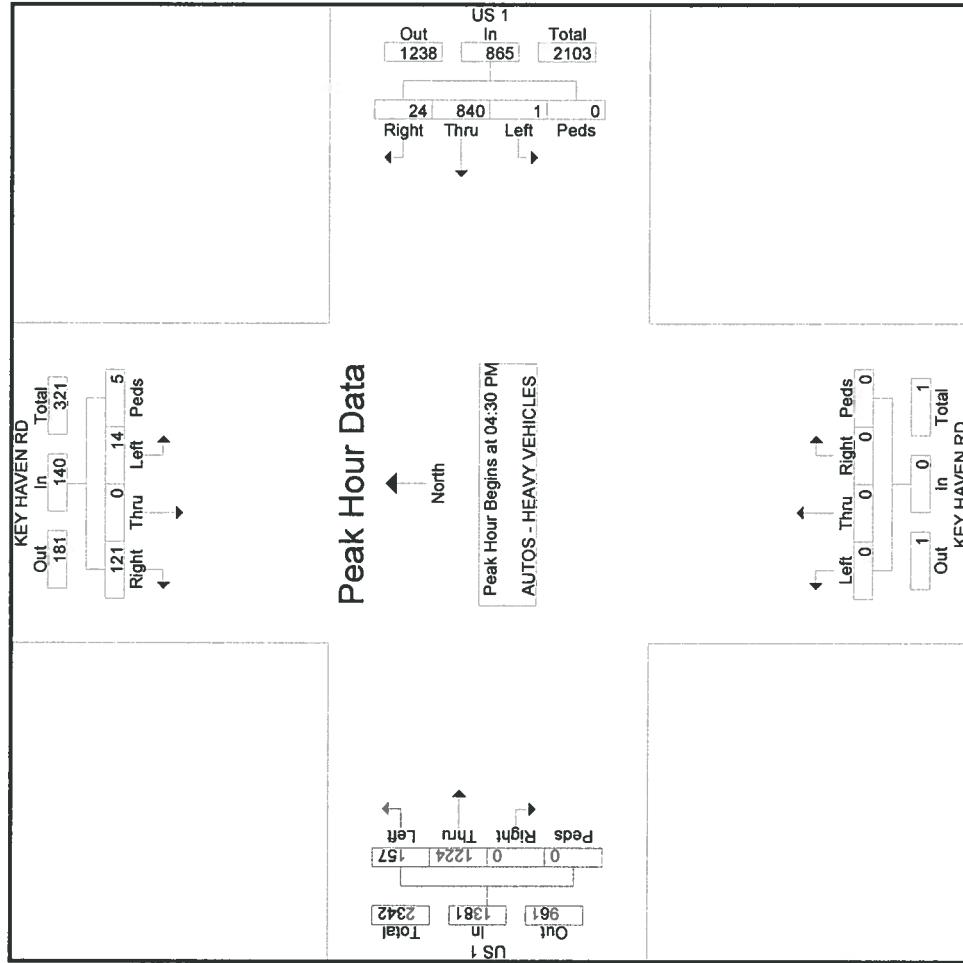
From West

Start Time	KEY HAVEN RD						KEY HAVEN RD						KEY HAVEN RD										
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total		
<b>Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1</b>																							
Peak Hour for Entire Intersection Begins at 04:30 PM																							
04:30 PM	22	0	3	0	25	4	258	0	0	262	0	0	0	0	0	0	265	30	0	295	0	295	
04:45 PM	27	0	4	3	34	5	190	0	0	195	0	0	0	0	0	0	312	45	0	324	43	367	
05:00 PM	33	0	4	1	38	7	227	1	0	235	0	0	0	0	0	0	323	39	0	362	39	640	
05:15 PM	39	0	3	1	43	8	165	0	0	173	0	0	0	0	0	0	1224	157	0	1381	157	578	
Total Volume	121	0	14	5	140	24	840	1	0	865	0	0	0	0	0	0	88.6	11.4	0	2386	11.4	2386	
% App. Total	86.4	0	10	3.6	2.8	97.1	0.1	0	0	0	0	0	0	0	0	0	.000	.000	.000	.000	.000	.941	
PHF	.776	.000	.875	.417	.814	.750	.250	.814	.000	.825	.000	.000	.000	.000	.000	.000	.944	.872	.000	.000	.000	.932	

**Crossroads Engineering**  
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CLIENT : KBP CONSULTING  
 JOB NO : 2013-024  
 PROJECT : STOCK ISLAND COUNTS  
 COUNTY : MONROE

File Name : keyhaven@us1  
 Site Code : 00000000  
 Start Date : 4/10/2013  
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**Crossroads Engineering**  
 13284 SW 120th Street  
 Miami, Florida, 33186  
 TEL: 305-233-3997 FAX: 305-233-7720

**CLIENT : KBP CONSULTING**  
**JOB NO : 2013-024**  
**PROJECT : STOCK ISLAND COUNTS**  
**COUNTY : MONROE**

File Name : ecollegerd@us1  
 Site Code : 00000000  
 Start Date : 4/10/2013  
 Page No : 1

COLLEGE RD EAST					
	From North				
Start Time	Right	Thru	Left	Peds	
07:00 AM	19	0	4	0	27
07:15 AM	7	0	1	0	374
07:30 AM	23	0	3	0	365
07:45 AM	6	0	1	0	23
Total	55	0	9	0	1296
08:00 AM	15	0	4	0	15
08:15 AM	12	0	6	0	278
08:30 AM	8	0	5	0	12
08:45 AM	14	0	8	0	293
Total	49	0	23	0	56
					1097

\*\*\* BREAK \*\*\*

Groups Printed- HEAVY VEHICLES					
US 1					
	COLLEGE RD EAST			From South	
	From East	Left	Peds	Right	Thru
Start Time	Right	Thru	Left	Right	Thru
07:00 AM	19	0	4	0	0
07:15 AM	7	0	1	0	0
07:30 AM	23	0	3	0	0
07:45 AM	6	0	1	0	0
Total	55	0	9	0	0
08:00 AM	15	0	4	0	0
08:15 AM	12	0	6	0	0
08:30 AM	8	0	5	0	0
08:45 AM	14	0	8	0	0
Total	49	0	23	0	56
					1097

US 1					
From West					
	COLLEGE RD EAST			From South	
	From East	Left	Peds	Right	Thru
Start Time	Right	Thru	Left	Right	Thru
07:00 AM	19	0	4	0	0
07:15 AM	7	0	1	0	0
07:30 AM	23	0	3	0	0
07:45 AM	6	0	1	0	0
Total	55	0	9	0	0
08:00 AM	15	0	4	0	0
08:15 AM	12	0	6	0	0
08:30 AM	8	0	5	0	0
08:45 AM	14	0	8	0	0
Total	49	0	23	0	56
					1097

**Crossroads Engineering**  
 13284 SW 120th Street  
 Miami, Florida, 33186  
 TEL: 305-233-3997 FAX: 305-233-7720

**CLIENT : KBP CONSULTING**  
**JOB NO : 2013-024**  
**PROJECT : STOCK ISLAND COUNTS**  
**COUNTY : MONROE**

File Name : ecollegerd@us1  
 Site Code : 00000000  
 Start Date : 4/10/2013  
 Page No : 4

**COLLEGE RD EAST**

From North

**COLLEGE RD EAST**

From South

**US 1**

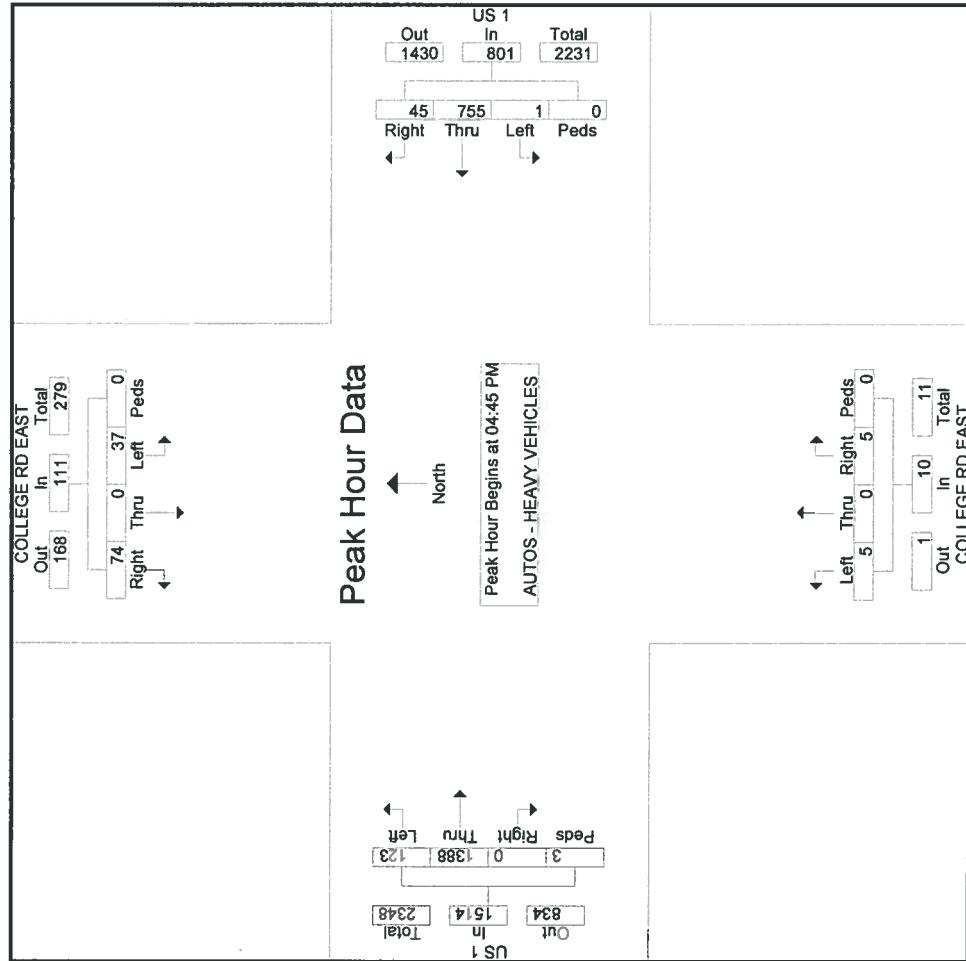
From West

Start Time	COLLEGE RD EAST					COLLEGE RD EAST					US 1					
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
<b>Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1</b>																
04:45 PM	15	0	8	0	23	5	167	1	0	173	2	0	4	0	305	27
05:00 PM	24	0	14	0	38	12	243	0	0	255	0	0	0	0	374	2
05:15 PM	11	0	7	0	18	16	176	0	0	192	2	0	4	0	355	36
05:30 PM	24	0	8	0	32	12	169	0	0	181	1	0	2	0	354	29
Total Volume	74	0	37	0	111	45	755	1	0	801	5	0	5	0	1388	123
% App. Total	66.7	0	33.3	0	5.6	94.3	0.1	0	0	50	0	0	50	0	91.7	8.1
PHF	.771	.000	.661	.000	.730	.703	.777	.250	.000	.785	.625	.000	.625	.000	.854	.375
															.928	.870

**Crossroads Engineering**  
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CLIENT : KBP CONSULTING  
 JOB NO : 2013-024  
 PROJECT : STOCK ISLAND COUNTS  
 COUNTY : MONROE

File Name : ecollegerd@us1  
 Site Code : 00000000  
 Start Date : 4/10/2013  
 Page No : 5



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**CLIENT : KBP CONSULTING**  
**JOB NO : 2013-024**  
**PROJECT : STOCK ISLAND COUNTS**  
**COUNTY : MONROE**

File Name : 3rdst@us1  
 Site Code : 00000000  
 Start Date : 4/10/2013  
 Page No : 1

#### Groups Printed- HEAVY VEHICLES

	3RD ST From North						3RD ST From South						US 1 From West					
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total	
Start Time																		
07:00 AM	0	0	0	0	0	214	17	0	12	0	0	0	103	0	0	0	347	
07:15 AM	0	0	0	0	0	346	36	0	12	0	0	1	139	0	0	0	534	
07:30 AM	0	0	0	0	0	384	35	0	38	0	2	1	164	0	0	0	627	
07:45 AM	0	0	0	0	4	313	70	0	47	0	7	0	4	165	0	0	0	610
Total	0	0	0	0	4	1257	158	0	109	0	10	1	6	571	0	2	2118	
08:00 AM	0	0	0	0	0	268	76	0	36	0	0	1	3	162	0	0	0	546
08:15 AM	0	0	0	0	0	229	28	0	19	0	4	1	4	146	0	0	0	431
08:30 AM	0	0	0	0	0	221	36	0	19	0	3	1	5	146	0	0	0	431
08:45 AM	0	0	0	0	0	235	27	0	18	0	0	0	2	171	0	0	0	453
Total	0	0	0	0	0	953	167	0	92	0	7	3	14	625	0	0	0	1861
*** BREAK ***																		
04:00 PM	0	0	0	0	0	209	36	0	48	0	2	3	5	274	0	0	0	577
04:15 PM	0	0	0	0	0	188	36	0	31	0	5	0	5	287	0	0	0	552
04:30 PM	0	0	0	0	0	216	32	0	50	0	4	0	4	303	0	0	0	609
04:45 PM	0	0	0	0	0	174	34	1	35	0	3	1	7	294	0	0	0	549
Total	0	0	0	0	0	787	138	1	164	0	14	4	21	1158	0	0	0	2287
05:00 PM	0	0	0	0	0	214	29	0	56	0	3	1	3	327	0	0	0	633
05:15 PM	0	0	0	0	0	195	32	1	49	0	2	0	3	371	0	0	0	653
05:30 PM	0	0	0	0	0	197	27	0	40	0	1	0	2	325	0	0	0	592
05:45 PM	0	0	0	0	0	141	21	0	32	0	2	0	4	316	0	1	1	517
Total	0	0	0	0	0	747	109	1	177	0	8	1	12	1339	0	1	1	2395
Grand Total	0	0	0	0	0	3744	572	2	542	0	39	9	53	3693	0	3	3	8661
Approch %	0	0	0	0	0	86.6	13.2	0	91.9	0	6.6	1.5	1.4	98.5	0	0	0.1	
Total %	0	0	0	0	0	43.2	6.6	0	6.3	0	0.5	0.1	0.6	42.6	0	0	0	

Crossroads Engineering

13284 SW 120th Street

Miami, Florida, 33186

TEL: 305-233-3997 FAX: 305-233-7720

CLIENT : KBP CONSULTING  
JOB NO : 2013-024  
PROJECT : STOCK ISLAND COUNTS  
COUNTY : MONROE

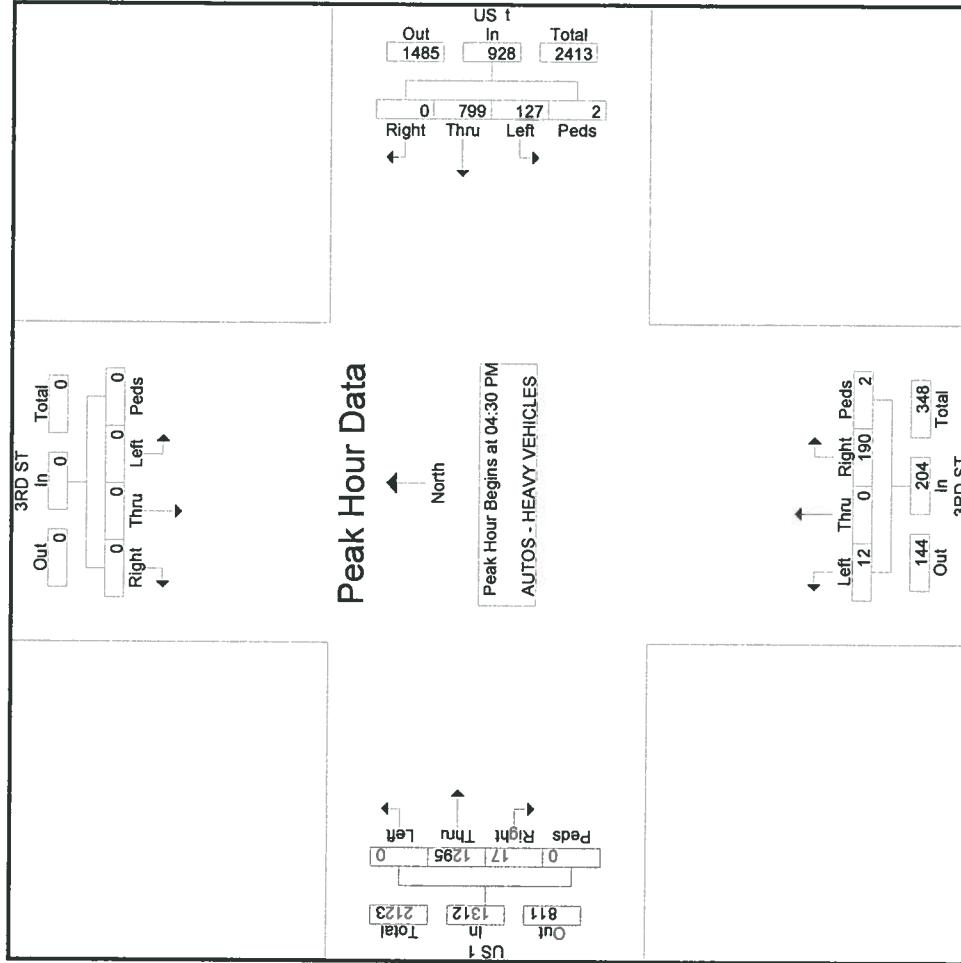
File Name : 3rdst@us1  
Site Code : 00000000  
Start Date : 4/10/2013  
Page No : 4

Start Time	3RD ST From North			US 1 From East			3RD ST From South			US 1 From West			Int. Total				
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total		
<b>Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1</b>																	
04:30 PM	0	0	0	0	0	216	32	0	248	50	0	4	0	54	4		
04:45 PM	0	0	0	0	0	174	34	1	243	56	0	1	39	7	303	0	
05:00 PM	0	0	0	0	0	214	29	0	228	49	0	2	60	3	294	0	
05:15 PM	0	0	0	0	0	195	32	1	228	49	0	2	51	3	327	0	
Total Volume	0	0	0	0	0	799	127	2	928	190	0	12	2	204	17	1295	0
% App. Total	0	0	0	0	0	86.1	13.7	0.2	93.1	0	5.9	1	1.3	98.7	0	0	0
PHF	.000	.000	.000	.000	.000	.925	.934	.500	.935	.848	.000	.750	.500	.607	.873	.000	.877

**Crossroads Engineering**  
13284 SW 120th Street  
Miami, Florida, 33186  
TEL: 305-233-3997 FAX: 305-233-7720

CLIENT : KBP CONSULTING  
JOB NO : 2013-024  
PROJECT : STOCK ISLAND COUNTS  
COUNTY : MONROE

File Name : 3rdst@us1  
Site Code : 00000000  
Start Date : 4/10/2013  
Page No : 5



**Crossroads Engineering**  
13284 SW 120th Street  
Miami, Florida, 33186  
TEL: 305-233-3997 FAX: 305-23

CLIENT : KBP CONSULTING  
JOB NO : 2013-024  
PROJECT : STOCK ISLAND COUNTS  
COUNTY : MONROE

File Name : mcdonald@us1  
Site Code : 00000000  
Start Date : 4/10/2013  
Page No : 1

**Crossroads Engineering**  
13284 SW 120th Street  
Miami, Florida, 33186  
TEL: 305-233-3399 FAX: 305-23

CLIENT : KBP CONSULTING  
JOB NO : 2013-024  
PROJECT : STOCK ISLAND COUNTS  
COUNTY : MONROE

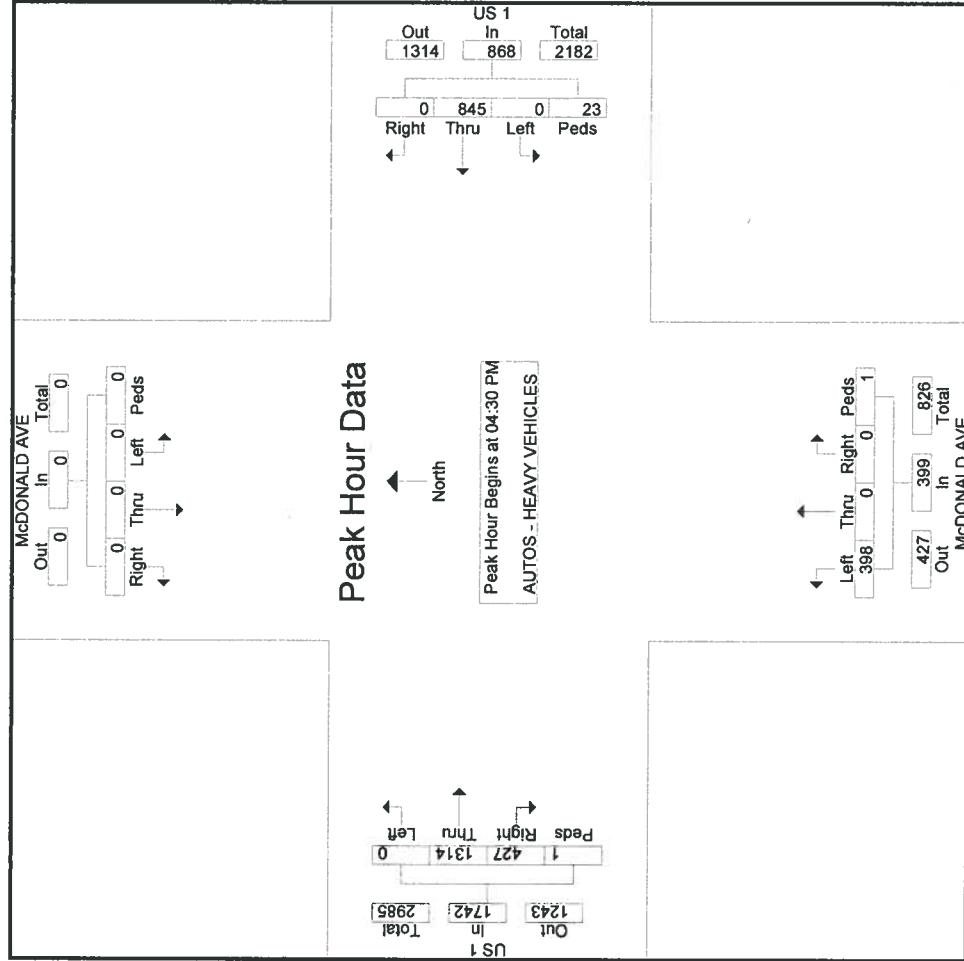
File Name : mcdonald@us1  
Site Code : 00000000  
Start Date : 4/10/2013  
Page No : 4

Start Time	McDONALD AVE From North			US 1 From East			McDONALD AVE From South			US 1 From West						
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
<b>Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1</b>																
Peak Hour for Entire Intersection Begins at 04:30 PM																
04:30 PM	0	0	0	0	0	0	243	0	10	253	0	0	101	0	302	0
04:45 PM	0	0	0	0	0	0	187	0	5	192	0	0	92	0	321	0
05:00 PM	0	0	0	0	0	0	228	0	5	233	0	0	115	1	328	0
05:15 PM	0	0	0	0	0	0	187	0	3	190	0	0	90	0	363	1
Total Volume	0	0	0	0	0	0	845	0	23	868	0	0	398	1	399	427
% App. Total	0	0	0	0	0	0	97.4	0	2.6	0	0	0	99.7	0.3	24.5	75.4
PHF	.000	.000	.000	.000	.000	.000	.869	.000	.575	.858	.000	.865	.250	.860	.890	.905
															.000	.250
															.900	.961

**Crossroads Engineering**  
13284 SW 120th Street  
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TEL: 305-233-3997 FAX: 305-233-7720

CLIENT : KBP CONSULTING  
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PROJECT : STOCK ISLAND COUNTS  
COUNTY : MONROE

File Name : mcdonald@us1  
Site Code : 00000000  
Start Date : 4/10/2013  
Page No : 5



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**PROJECT : STOCK ISLAND COUNTS**  
**COUNTY : MONROE**

File Name : cross@us1  
 Site Code : 00000000  
 Start Date : 4/10/2013  
 Page No : 1

	CROSS ST From North						CROSS ST From South						US 1 From West					
	Right	Left	Peds	Right	Left	Peds	Right	Left	Peds	Right	Left	Peds	Right	Left	Peds	Int. Total		
Start Time																		
07:00 AM	0	0	0	0	0	0	310	2	1	44	4	0	13	168	0	0		
07:15 AM	0	0	0	0	0	0	403	7	3	73	4	11	171	0	0	677		
07:30 AM	0	0	0	0	0	0	435	0	5	97	2	13	234	0	0	793		
07:45 AM	0	0	0	0	0	0	430	0	11	9	0	100	4	31	221	0	0	
Total	0	0	0	0	0	0	1578	9	20	26	0	314	14	68	794	0	2823	
08:00 AM	0	0	0	0	0	0	419	5	1	2	0	63	5	30	211	1	0	
08:15 AM	0	0	0	0	0	0	364	3	0	4	0	72	5	34	217	0	0	
08:30 AM	0	0	0	0	0	0	305	6	4	6	0	71	0	36	220	0	0	
08:45 AM	0	0	0	0	0	0	272	8	2	4	0	75	2	23	231	0	0	
Total	0	0	0	0	0	0	1360	22	7	16	0	281	12	123	879	1	0	
<b>*** BREAK ***</b>																		
04:00 PM	0	0	0	0	0	0	296	5	5	8	0	50	8	50	379	0	1	
04:15 PM	0	0	0	0	0	0	315	5	2	8	0	35	1	56	407	0	0	
04:30 PM	0	0	0	0	0	0	287	8	1	8	0	43	1	56	437	0	0	
04:45 PM	0	0	0	0	0	0	265	12	4	10	0	51	0	60	411	0	0	
Total	0	0	0	0	0	0	1163	30	12	34	0	179	10	222	1634	0	3285	
05:00 PM	0	0	0	0	0	0	300	11	9	12	0	60	4	65	405	0	0	
05:15 PM	0	0	0	0	0	0	282	6	4	11	0	53	5	74	475	0	0	
05:30 PM	0	0	0	0	0	0	262	3	2	9	0	48	0	73	432	0	0	
05:45 PM	0	0	0	0	0	0	211	7	5	10	0	57	5	50	368	0	0	
Total	0	0	0	0	0	0	1115	27	20	42	0	218	14	262	1680	0	775	
<b>Grand Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5216</b>	<b>88</b>	<b>59</b>	<b>118</b>	<b>0</b>	<b>992</b>	<b>50</b>	<b>675</b>	<b>4987</b>	<b>1</b>	<b>2</b>	
Apprich %	0	0	0	0	0	0	97.2	1.6	1.1	10.2	0	85.5	4.3	11.9	88	0	0	
Total %	0	0	0	0	0	0	42.8	0.7	0.5	1	0	8.1	0.4	5.5	40.9	0	0	

Crossroads Engineering

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CLIENT : KBP CONSULTING  
JOB NO : 2013-024  
PROJECT : STOCK ISLAND COUNTS  
COUNTY : MONROE

File Name : cross@us1  
Site Code : 00000000  
Start Date : 4/10/2013  
Page No : 4

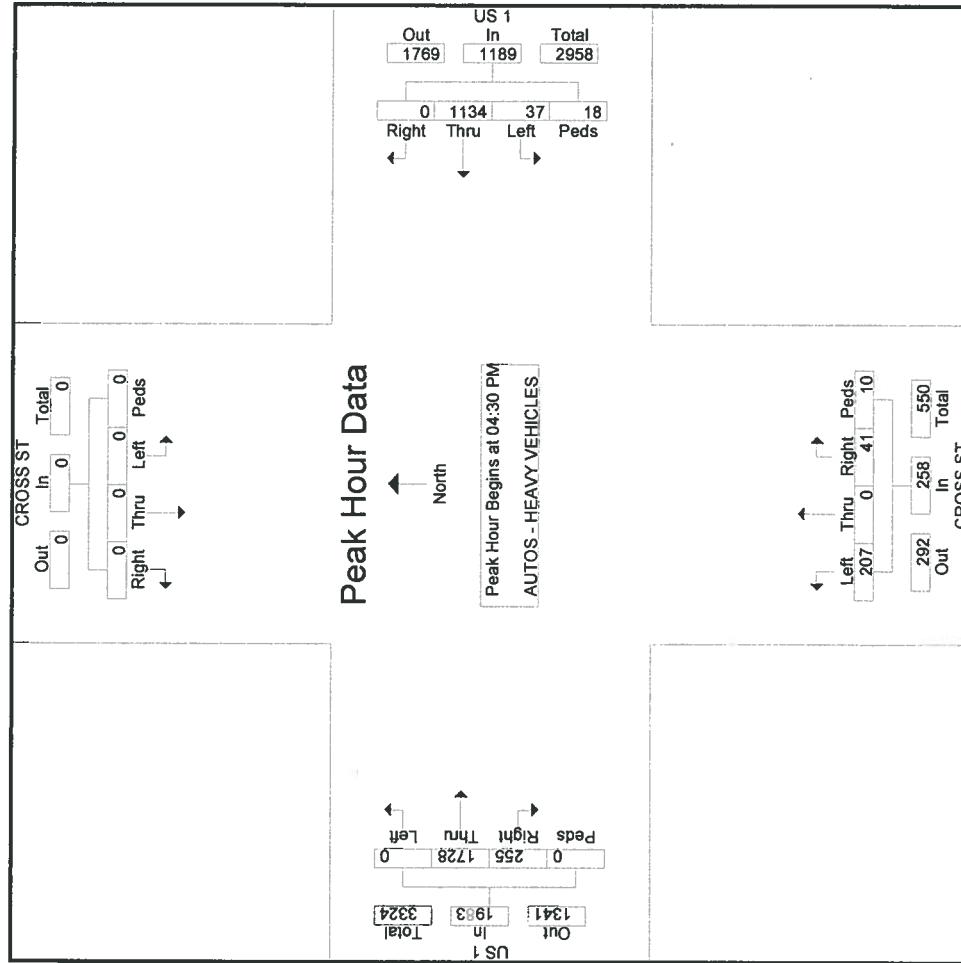
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File Name : cross@us1  
Site Code : 00000000  
Start Date : 4/10/2013  
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**CLIENT : KBP CONSULTING**  
**JOB NO : 2013-024**  
**PROJECT : STOCK ISLAND COUNTS**  
**COUNTY : MONROE**

**File Name** : wcollegerd@us1  
**Site Code** : 00000000  
**Start Date** : 4/10/2013  
**Page No** : 1

**Groups Printed- HEAVY VEHICLES**

	COLLEGE RD WEST						COLLEGE RD WEST						US 1					
	From North			From South			From East			From West			From South			From West		
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total	
07:00 AM	19	0	7	6	4	359	0	0	0	0	0	0	0	0	153	35	0	583
07:15 AM	39	0	12	3	11	472	0	0	0	0	0	0	0	0	180	53	1	771
07:30 AM	55	0	12	25	15	489	0	1	0	0	0	0	0	0	232	61	0	890
07:45 AM	74	0	24	9	18	512	0	1	0	0	0	0	0	0	198	75	0	911
Total	187	0	55	43	48	1832	0	2	0	0	0	0	0	0	763	224	1	3155
08:00 AM	69	0	22	4	17	480	0	0	0	0	0	0	0	0	185	79	0	856
08:15 AM	56	0	21	9	5	403	0	0	0	0	0	0	0	0	208	40	0	742
08:30 AM	26	0	8	8	12	391	0	0	0	0	0	0	0	0	249	53	0	747
08:45 AM	22	0	3	5	11	416	0	0	0	0	0	0	0	0	246	53	1	757
Total	173	0	54	26	45	1690	0	0	0	0	0	0	0	0	888	225	1	3102

\*\*\* BREAK \*\*\*

	Right	Thru	Left	Peds	Int. Total														
04:00 PM	51	0	31	8	10	328	0	0	0	0	0	0	0	0	0	374	25	0	827
04:15 PM	52	0	16	7	11	318	0	1	0	0	0	0	0	0	0	410	37	0	852
04:30 PM	56	0	15	6	5	340	0	0	0	0	0	0	0	0	0	442	39	0	903
04:45 PM	42	0	15	1	7	315	0	0	0	0	0	0	0	0	0	416	59	0	855
Total	201	0	77	22	33	1301	0	1	0	0	0	0	0	0	0	1642	160	0	3437
05:00 PM	84	0	27	0	7	409	0	0	0	0	0	0	0	0	0	482	51	0	1060
05:15 PM	52	0	35	0	8	326	0	0	0	0	0	0	0	0	0	443	44	0	908
05:30 PM	44	0	31	0	9	321	0	0	0	0	0	0	0	0	0	426	38	0	869
05:45 PM	42	0	18	0	5	297	0	0	0	0	0	0	0	0	0	445	31	0	838
Total	222	0	111	0	29	1353	0	0	0	0	0	0	0	0	0	1796	164	0	3675
Grand Total	783	0	297	91	155	6176	0	3	0	0	0	0	0	0	0	5089	773	2	13369
Apprch %	66.9	0	25.4	7.8	2.4	97.5	0	0	0	0	0	0	0	0	0	86.8	13.2	0	
Total %	5.9	0	2.2	0.7	1.2	46.2	0	0	0	0	0	0	0	0	0	38.1	5.8	0	

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**CLIENT : KBP CONSULTING**  
**JOB NO : 2013-024**  
**PROJECT : STOCK ISLAND COUNTS**  
**COUNTY : MONROE**

File Name : wcollegerd@us1  
 Site Code : 00000000  
 Start Date : 4/10/2013  
 Page No : 4

Start Time	COLLEGE RD WEST						COLLEGE RD WEST						US 1						US 1					
	From North			From South			From East			From West			From South			From East			From West			From South		
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total			
<b>Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1</b>																								
Peak Hour for Entire Intersection Begins at 04:30 PM																								
04:30 PM	56	0	15	6	77	5	340	0	0	0	0	0	0	0	0	0	0	442	39	0	481	903		
04:45 PM	42	0	15	1	58	7	315	0	0	0	0	0	0	0	0	0	0	416	59	0	487	908		
05:00 PM	84	0	27	0	111	7	409	0	0	0	0	0	0	0	0	0	482	51	0	533	1060			
05:15 PM	52	0	35	0	326	8	334	0	0	0	0	0	0	0	0	0	443	44	0	487	908			
Total Volume	234	0	92	7	333	27	1390	0	0	0	0	0	0	0	0	0	1783	193	0	1976	3726			
% App. Total	70.3	0	27.6	2.1	1.9	98.1	0	0	0	0	0	0	0	0	0	0	90.2	9.8	0	927	.879			
PHF	.696	.000	.657	.292	.750	.844	.850	.000	.000	.852	.000	.000	.000	.000	.000	.000	.925	.818	.000	.927	.879			

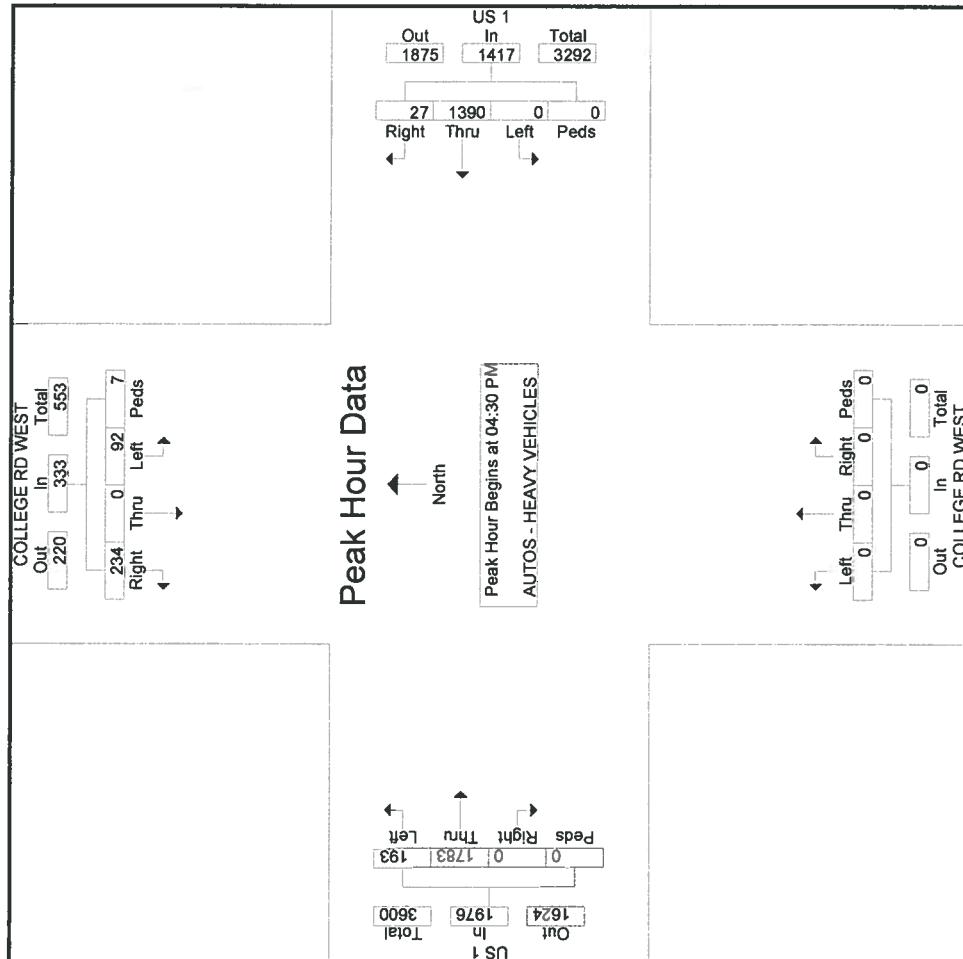
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PROJECT : STOCK ISLAND COUNTS  
COUNTY : MONROE

File Name : wcollegerd@us1  
Site Code : 00000000  
Start Date : 4/10/2013  
Page No : 5



# CROSSROADS ENGINEERING DATA, INC.

Page 1

CLIENT : KBP CONSULTING

JOB NO : 2013-024

PROJECT: STOCK ISLAND COUNTS

COUNTY: MONROE

13284 SW 120TH ST

MIAMI, FL 33186

**TEL: 305-233-3997**

Site Code: 370000000037

Date Start: 10-Apr-13

Date End: 11-Apr-13

McDONALD AVE BETWEEN US 1 AND 5TH ST

Start Time	10-Apr-13 Wed	SB	Hour Totals		NB	Hour Totals		Combined Totals	
			Morning	Afternoon		Morning	Afternoon	Morning	Afternoon
12:00		24	128		10	87			
12:15		18	72		9	69			
12:30		17	94		7	69			
12:45		16	85	75	379	3	87	29	312
01:00		18	101			5	94		
01:15		10	102			5	102		
01:30		16	97			3	105		
01:45		6	95	50	395	7	84	20	385
02:00		4	84			2	99		
02:15		4	105			9	94		
02:30		6	98			3	85		
02:45		5	87	19	374	1	78	15	356
03:00		6	124			3	95		
03:15		6	106			6	105		
03:30		8	107			5	99		
03:45		7	125	27	462	4	110	18	409
04:00		5	114			3	97		
04:15		11	106			4	93		
04:30		5	109			7	114		
04:45		7	113	28	442	10	104	24	408
05:00		4	125			8	111		
05:15		8	115			5	97		
05:30		7	105			14	68		
05:45		23	97	42	442	27	73	54	349
06:00		22	89			16	60		
06:15		14	95			18	64		
06:30		22	81			35	68		
06:45		48	81	106	346	55	60	124	252
07:00		37	65			50	53		
07:15		55	81			76	60		
07:30		66	68			104	37		
07:45		93	67	251	281	96	68	326	218
08:00		95	57			105	50		
08:15		84	72			117	51		
08:30		74	59			98	52		
08:45		86	57	339	245	94	41	414	194
09:00		75	63			76	42		
09:15		66	50			72	35		
09:30		69	49			67	37		
09:45		69	40	279	202	71	25	286	139
10:00		80	48			60	30		
10:15		89	46			86	20		
10:30		75	33			69	22		
10:45		73	40	317	167	76	18	291	90
11:00		93	36			77	25		
11:15		79	33			71	20		
11:30		76	36			79	18		
11:45		88	23	336	128	75	4	302	67
Total		1869	3863			1903	3179		
Percent		32.6%	67.4%			37.4%	62.6%		
AM Peak		07:45				07:30			
Vol.		346				422			
P.H.F.		0.911				0.902			
PM Peak		03:00				04:30			
Vol.		462				426			
P.H.F.		0.924				0.934			

# CROSSROADS ENGINEERING DATA, INC.

Page 2

CLIENT : KBP CONSULTING

13284 SW 120TH ST

JOB NO : 2013-024

MIAMI, FL 33186

PROJECT: STOCK ISLAND COUNTS

**TEL: 305-233-3997**

COUNTY: MONROE

Site Code: 370000000037

Date Start: 10-Apr-13

Date End: 11-Apr-13

McDONALD AVE BETWEEN US 1 AND 5TH ST

Start Time	11-Apr-13 Thu	SB	Hour Totals		NB	Hour Totals		Combined Totals	
			Morning	Afternoon		Morning	Afternoon	Morning	Afternoon
12:00		29	118		15	93			
12:15		19	95		6	89			
12:30		8	102		11	71			
12:45		14	86	70	401	8	91	40	344
01:00		8	105			5	86		
01:15		11	99			3	104		
01:30		11	103			7	81		
01:45		11	100	41	407	2	79	17	350
02:00		6	87			3	95		
02:15		6	99			1	96		
02:30		3	101			3	97		
02:45		4	97	19	384	3	92	10	380
03:00		6	125			1	73		
03:15		6	116			1	112		
03:30		5	97			5	94		
03:45		5	142	22	480	7	107	14	386
04:00		4	95			4	96		
04:15		8	104			5	96		
04:30		4	113			6	106		
04:45		7	108	23	420	8	97	23	395
05:00		3	115			7	101		
05:15		1	126			3	86		
05:30		9	108			10	71		
05:45		7	93	20	442	22	96	42	354
06:00		21	81			16	84		
06:15		16	86			15	79		
06:30		26	79			46	59		
06:45		58	79	121	325	44	65	121	287
07:00		45	80			65	57		
07:15		52	73			67	59		
07:30		65	80			92	60		
07:45		104	69	266	302	104	68	328	244
08:00		72	62			93	56		
08:15		81	62			115	43		
08:30		72	55			116	40		
08:45		77	59	302	238	82	37	406	176
09:00		76	61			71	40		
09:15		66	57			76	34		
09:30		74	43			72	28		
09:45		74	52	290	213	88	16	307	118
10:00		78	36			62	33		
10:15		62	38			53	27		
10:30		67	49			71	24		
10:45		79	47	286	170	87	30	273	114
11:00		77	33			70	20		
11:15		85	38			70	14		
11:30		95	25			82	17		
11:45		89	28	346	124	70	18	292	69
Total		1806	3906			1873	3217		
Percent		31.6%	68.4%			36.8%	63.2%		
AM Peak		11:00				07:45			
Vol.		346				428			
P.H.F.		0.911				0.922			
PM Peak			03:00				03:15		
Vol.			480				409		
P.H.F.			0.845				0.913		
Total		3675	7769			3776	6396		
Percent		32.1%	67.9%			37.1%	62.9%		
ADT/AADT		ADT 10,806			AADT 10,806				
Combined Total								7451	14165
								34.5%	65.5%

## **Appendix E**

### **ITE Trip Generation Excerpts**

## **Land Use: 110 General Light Industrial**

### **Description**

Light industrial facilities are free-standing facilities devoted to a single use. The facilities have an emphasis on activities other than manufacturing and typically have minimal office space. Typical light industrial activities include printing, material testing and assembly of data processing equipment. General heavy industrial (Land Use 120), industrial park (Land Use 130) and manufacturing (Land Use 140) are related uses.

### **Additional Data**

No vehicle occupancy data were available specifically for general light industrial, but the average was approximately 1.3 persons per automobile for all industrial uses.

The peak hour of the generator typically coincided with the peak hour of the adjacent street traffic.

Facilities with employees on shift work may peak at other hours.

The sites were surveyed in the early 1970s, the mid- to late 1980s and the 2000s throughout the United States.

### **Source Numbers**

7, 9, 10, 11, 15, 17, 88, 174, 179, 184, 191, 192, 251, 253, 286, 300, 611

# General Light Industrial (110)

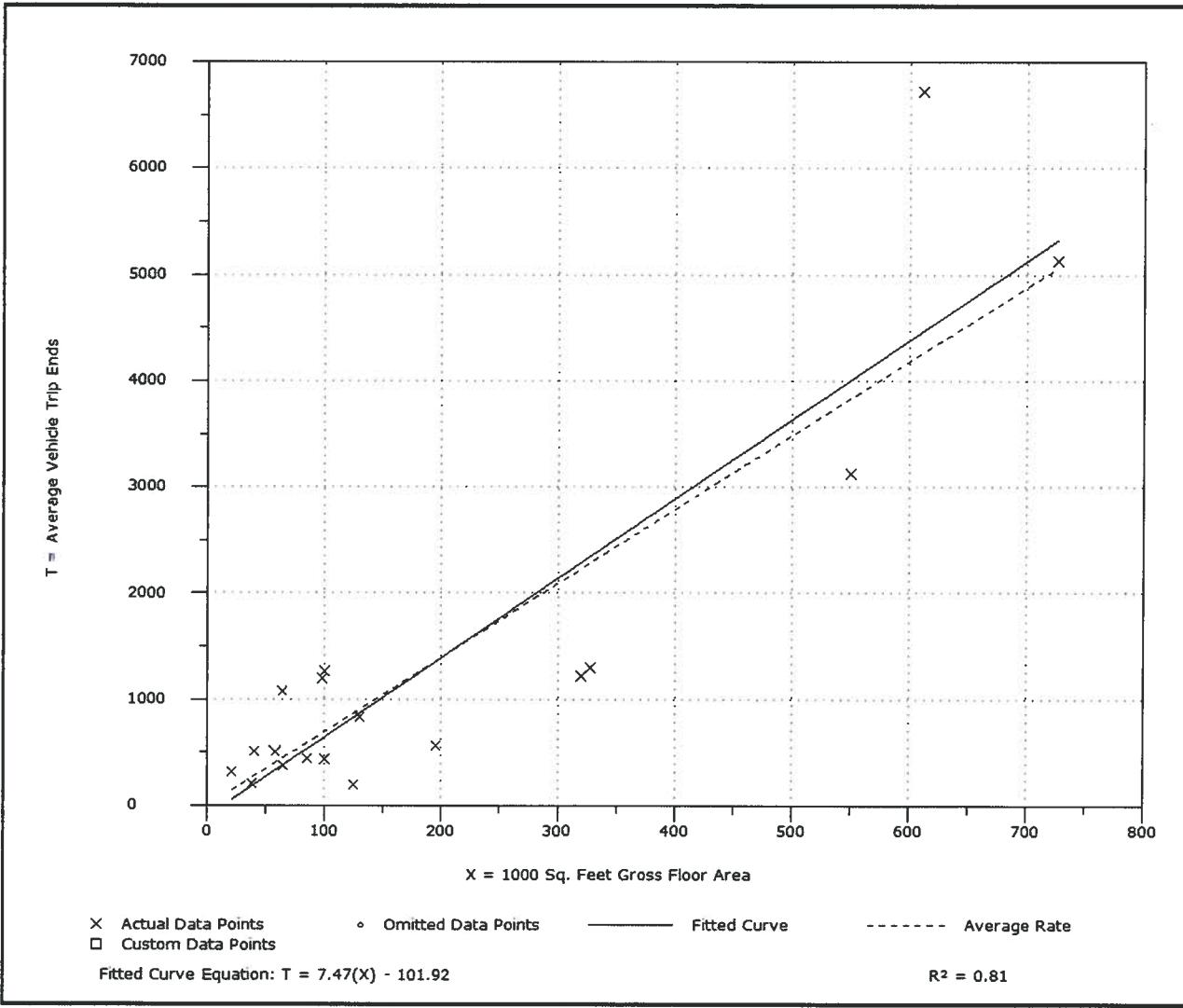
**Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area  
On a: Weekday**

Number of Studies: 18  
Average 1000 Sq. Feet GFA: 203  
Directional Distribution: 50% entering, 50% exiting

## **Trip Generation per 1000 Sq. Feet Gross Floor Area**

Average Rate	Range of Rates	Standard Deviation
6.97	1.58 - 16.88	4.24

## **Data Plot and Equation**



# General Light Industrial (110)

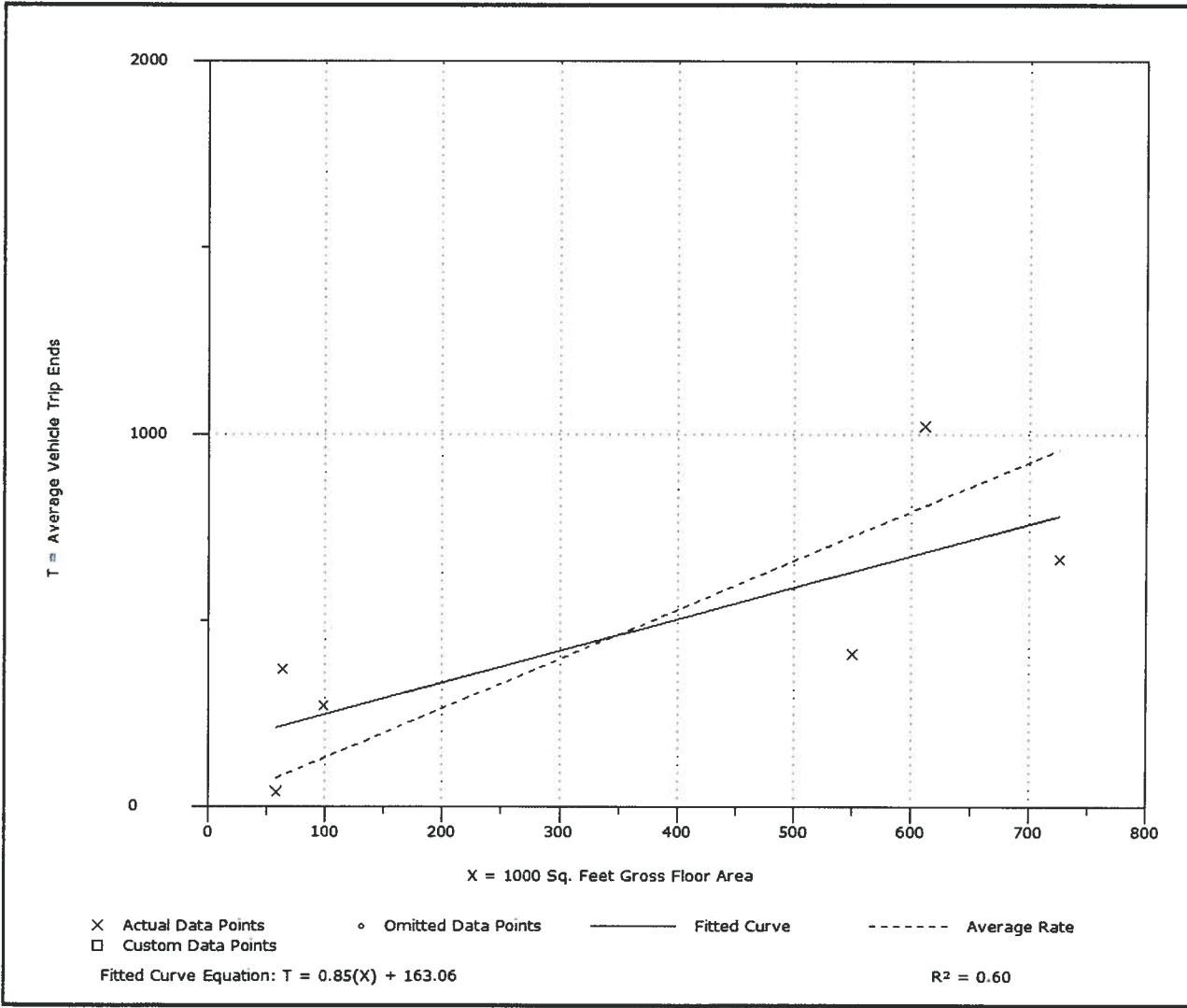
**Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area**  
On a: Saturday

Number of Studies: 6  
Average 1000 Sq. Feet GFA: 351  
Directional Distribution: 50% entering, 50% exiting

## Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
1.32	0.69 - 5.76	1.48

## Data Plot and Equation



# General Light Industrial (110)

**Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area**  
On a: Sunday

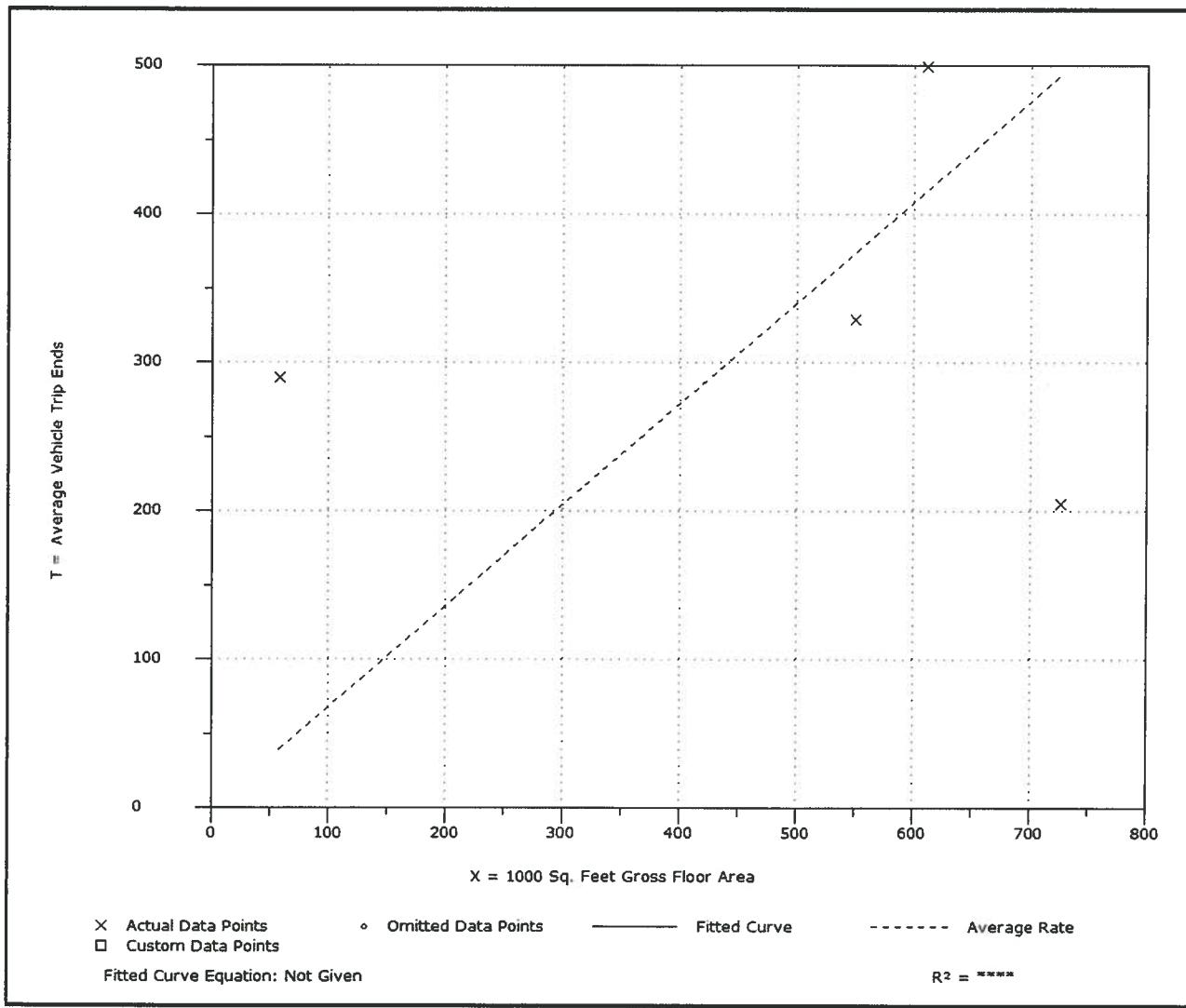
Number of Studies: 4  
Average 1000 Sq. Feet GFA: 486  
Directional Distribution: 50% entering, 50% exiting

## Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
0.68	0.28 - 5.00	1.14

## Data Plot and Equation

*Caution - Use Carefully - Small Sample Size*



# General Light Industrial (110)

**Average Vehicle Trip Ends vs:**

**On a:**

- 1000 Sq. Feet Gross Floor Area**
- Weekday**
- Peak Hour of Adjacent Street Traffic**
- One Hour Between 4 and 6 p.m.**

**Number of Studies:** 27

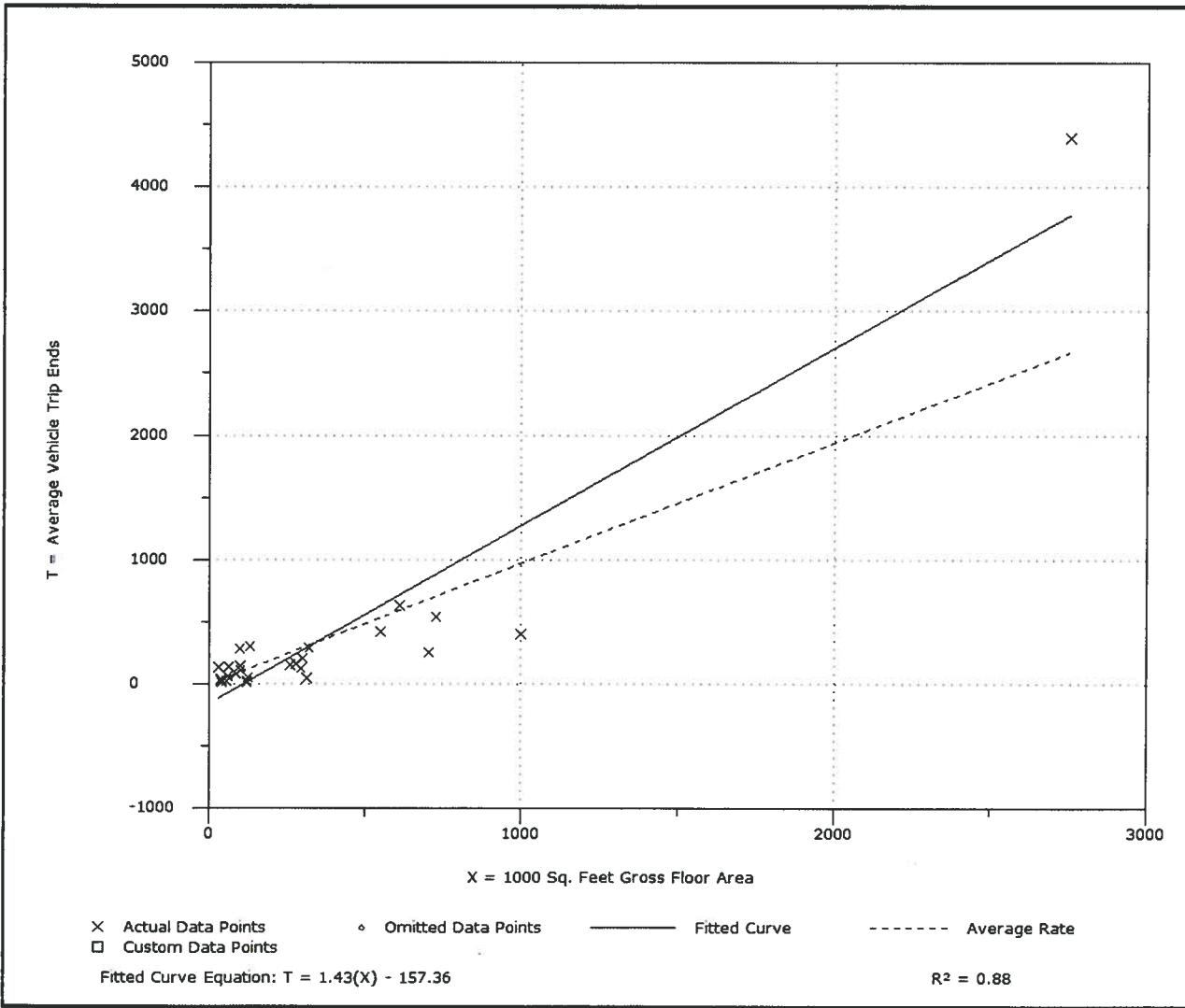
**Average 1000 Sq. Feet GFA:** 345

**Directional Distribution:** 12% entering, 88% exiting

## Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
0.97	0.08 - 4.50	1.16

## Data Plot and Equation



## **Land Use: 151 Mini-Warehouse**

### **Description**

Mini-warehouses are buildings in which a number of storage units or vaults are rented for the storage of goods. They are typically referred to as "self-storage" facilities. Each unit is physically separated from other units, and access is usually provided through an overhead door or other common access point.

### **Additional Data**

Truck trips accounted for 2 to 15 percent of the weekday traffic at the sites where data were available.

Vehicle occupancy ranged from 1.2 to 1.9 persons per automobile on an average weekday.

#### **Peak hours of the generator—**

The weekday P.M. peak hour was between 12:00 p.m. and 7:00 p.m. The Saturday peak hour was between 10:00 a.m. and 1:00 p.m. The Sunday peak hour was between 1:00 p.m. and 6:00 p.m.

For the purpose of this land use, the independent variable "occupied storage units" is defined as the number of units that have been rented.

The sites were surveyed between 1979 and 2008 in California, Colorado, Massachusetts, New Jersey and Texas.

### **Source Numbers**

113, 212, 403, 551, 568, 642, 708, 724

# Mini-Warehouse (151)

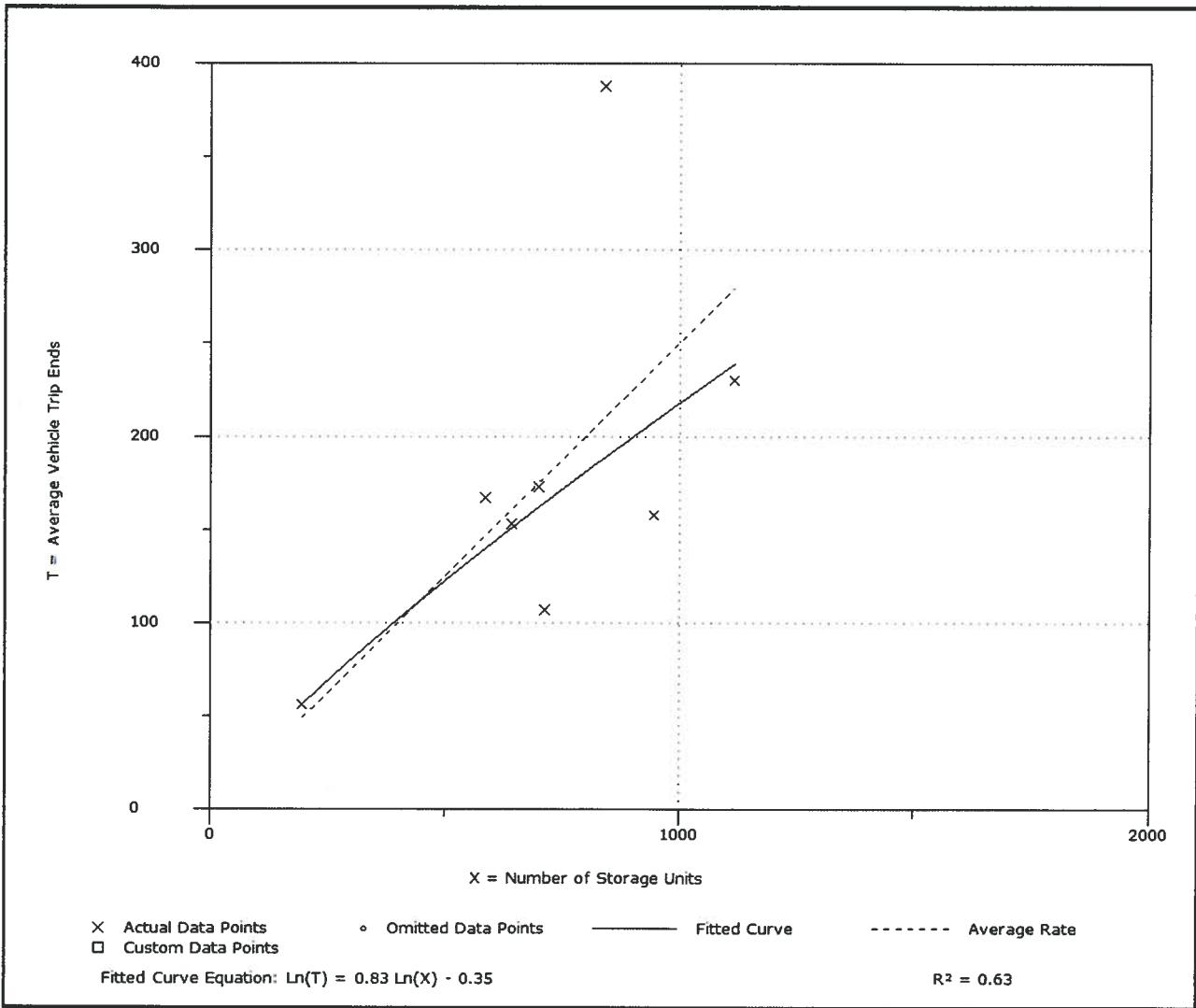
**Average Vehicle Trip Ends vs: Storage Units  
On a: Weekday**

Number of Studies: 8  
 Average Number of Storage Units: 717  
 Directional Distribution: 50% entering, 50% exiting

**Trip Generation per Storage Unit**

Average Rate	Range of Rates	Standard Deviation
0.25	0.15 - 0.46	0.51

**Data Plot and Equation**



# Mini-Warehouse (151)

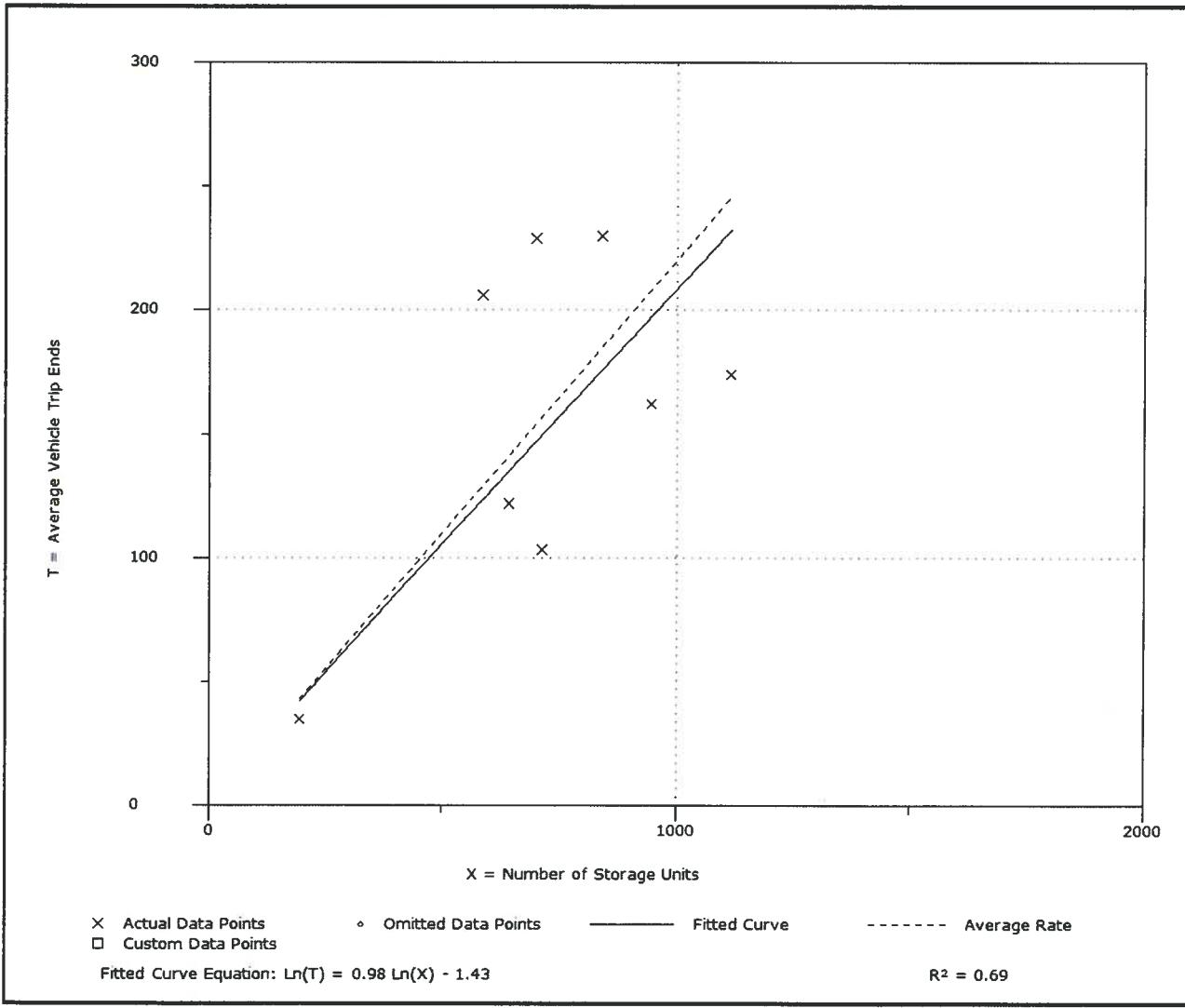
**Average Vehicle Trip Ends vs: Storage Units  
On a: Saturday**

Number of Studies: 8  
 Average Number of Storage Units: 717  
 Directional Distribution: 50% entering, 50% exiting

### **Trip Generation per Storage Unit**

Average Rate	Range of Rates	Standard Deviation
0.22	0.14 - 0.35	0.47

### **Data Plot and Equation**



# Mini-Warehouse (151)

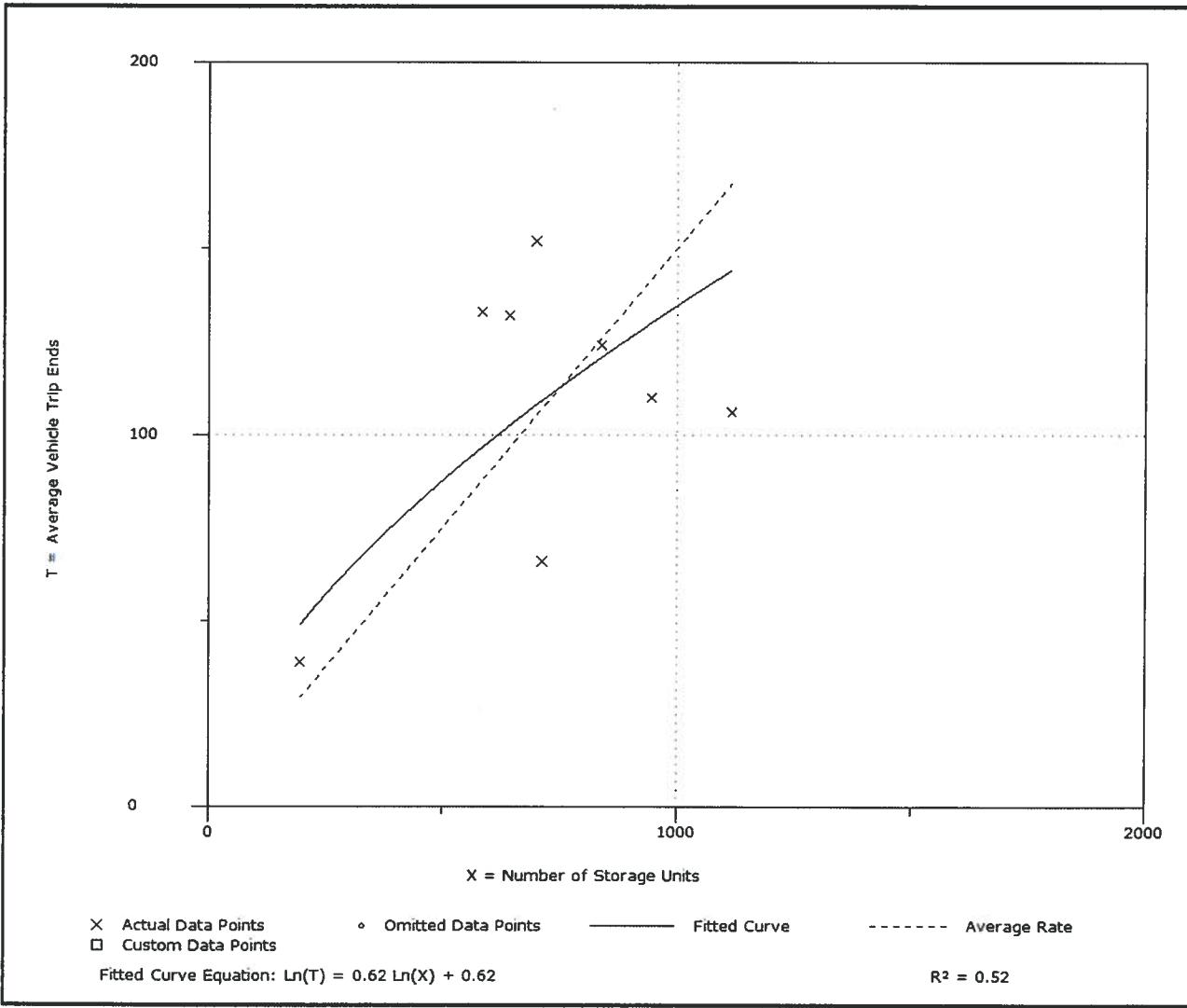
**Average Vehicle Trip Ends vs: Storage Units**  
**On a: Sunday**

Number of Studies: 8  
 Average Number of Storage Units: 717  
 Directional Distribution: 50% entering, 50% exiting

## Trip Generation per Storage Unit

Average Rate	Range of Rates	Standard Deviation
0.15	0.09 - 0.23	0.39

## Data Plot and Equation



## Mini-Warehouse (151)

**Average Vehicle Trip Ends vs:**

**On a:**

- Storage Units**
- Weekday**
- Peak Hour of Adjacent Street Traffic**
- One Hour Between 4 and 6 p.m.**

**Number of Studies:** 10

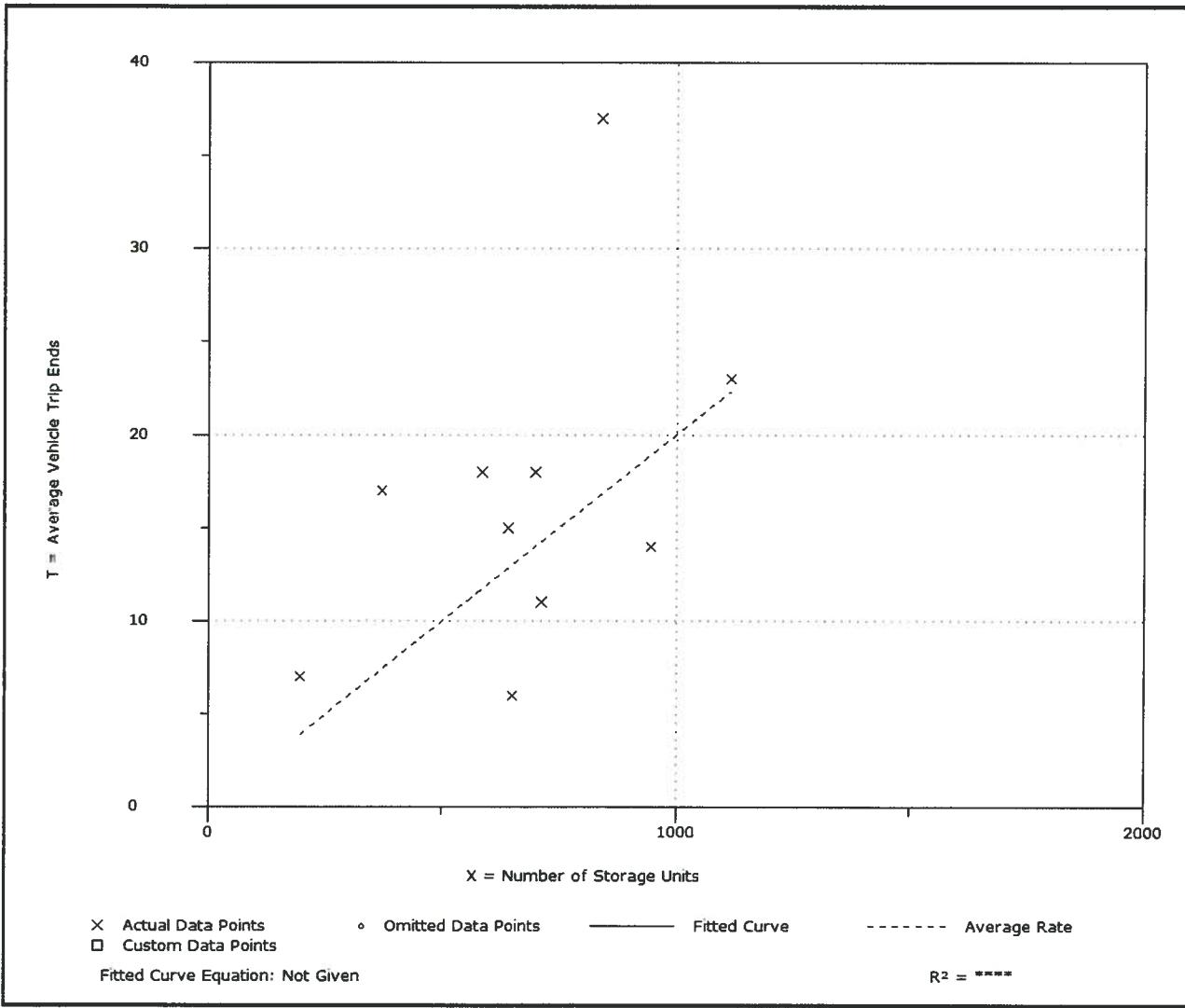
**Average Number of Storage Units:** 676

**Directional Distribution:** 48% entering, 52% exiting

### Trip Generation per Storage Unit

Average Rate	Range of Rates	Standard Deviation
0.02	0.01 - 0.05	0.16

### Data Plot and Equation



## **Land Use: 230**

### **Residential Condominium/Townhouse**

#### **Description**

Residential condominiums/townhouses are defined as ownership units that have at least one other owned unit within the same building structure. **Both condominiums and townhouses are included in this land use.** The studies in this land use did not identify whether the condominiums/townhouses were low-rise or high-rise. Low-rise residential condominium/townhouse (Land Use 231), high-rise residential condominium/townhouse (Land Use 232) and luxury condominium/townhouse (Land Use 233) are related uses.

#### **Additional Data**

The number of vehicles and the number of residents had a high correlation with average weekday vehicle trip ends. The use of these variables was limited, however, because the number of vehicles and residents was often difficult to obtain or predict. The number of dwelling units was generally used as the independent variable of choice because it is usually readily available, easy to project and had a high correlation with average weekday vehicle trip ends.

The peak hour of the generator typically coincided with the peak hour of the adjacent street traffic.

The sites were surveyed between the mid-1970s and the 2000s throughout the United States and Canada.

#### **Source Numbers**

4, 92, 94, 95, 97, 100, 105, 106, 114, 168, 186, 204, 237, 253, 293, 319, 320, 321, 390, 412, 418, 561, 562, 583, 638

# Residential Condominium/Townhouse (230)

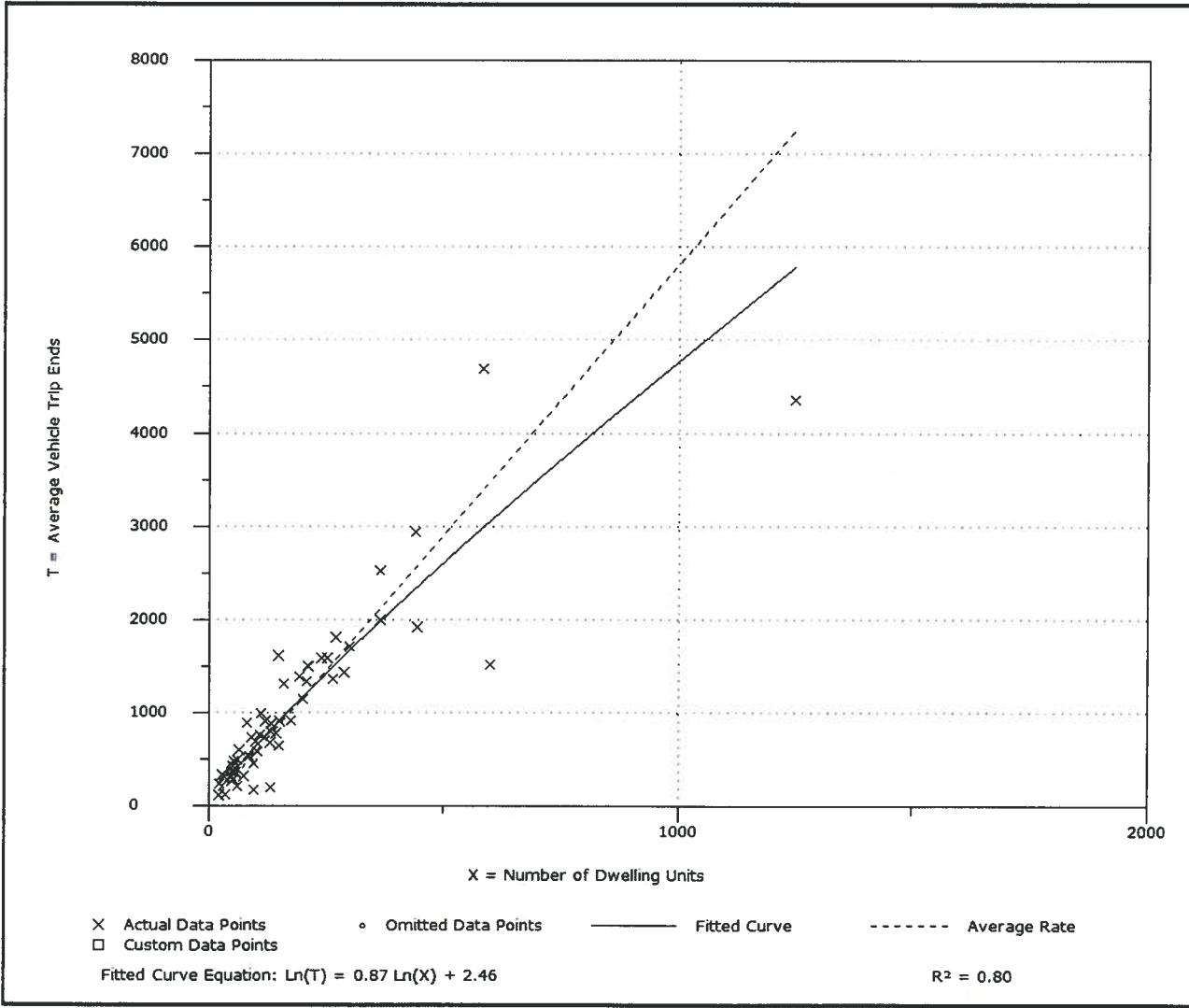
**Average Vehicle Trip Ends vs: Dwelling Units  
On a: Weekday**

Number of Studies: 56  
 Avg. Number of Dwelling Units: 179  
 Directional Distribution: 50% entering, 50% exiting

## **Trip Generation per Dwelling Unit**

Average Rate	Range of Rates	Standard Deviation
5.81	1.53 - 11.79	3.11

## **Data Plot and Equation**



# Residential Condominium/Townhouse (230)

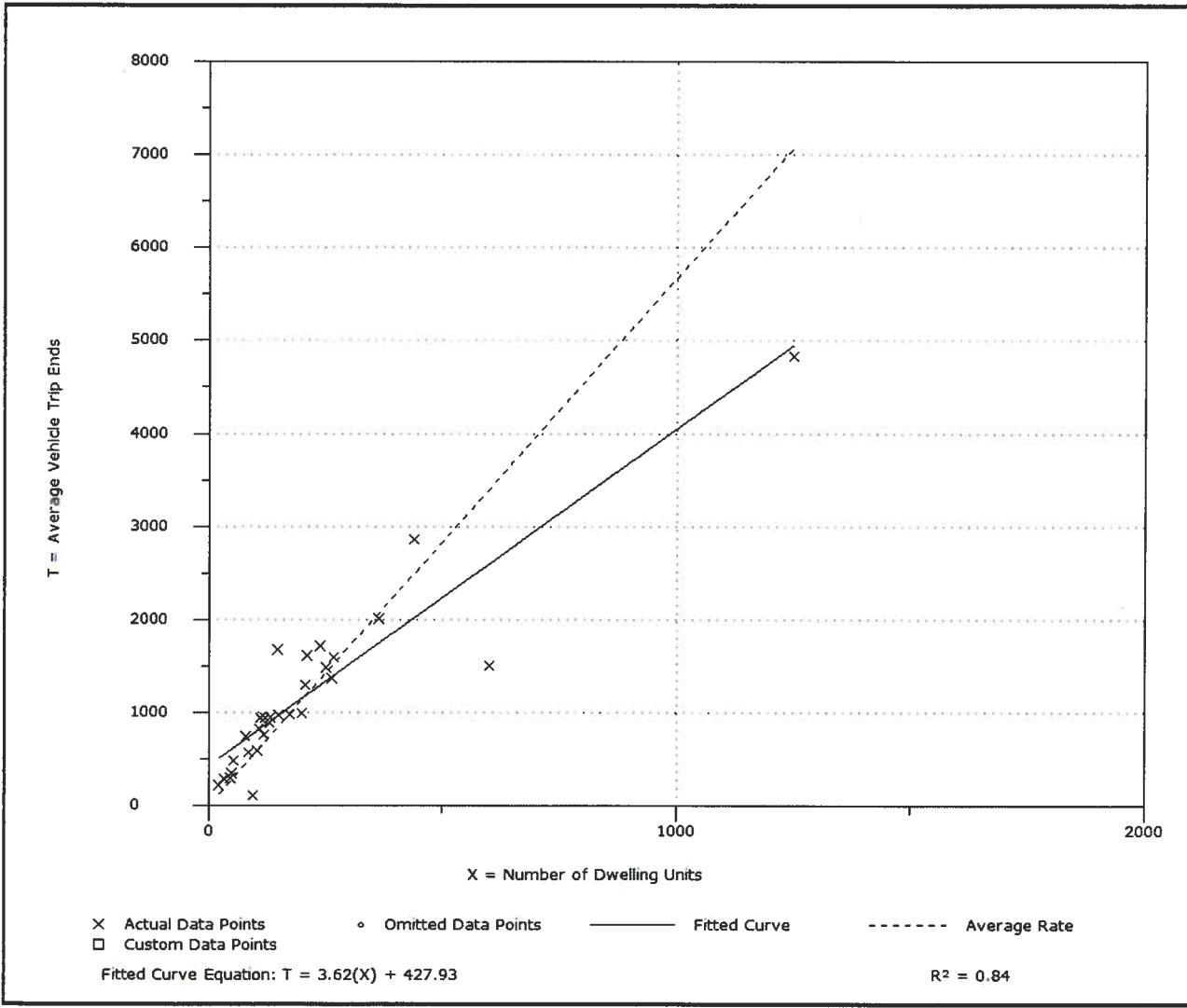
**Average Vehicle Trip Ends vs:**  
**Dwelling Units**  
**On a: Saturday**

Number of Studies: 30  
 Avg. Number of Dwelling Units: 209  
 Directional Distribution: 50% entering, 50% exiting

## Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
5.67	1.17 - 11.40	3.10

## Data Plot and Equation



# Residential Condominium/Townhouse (230)

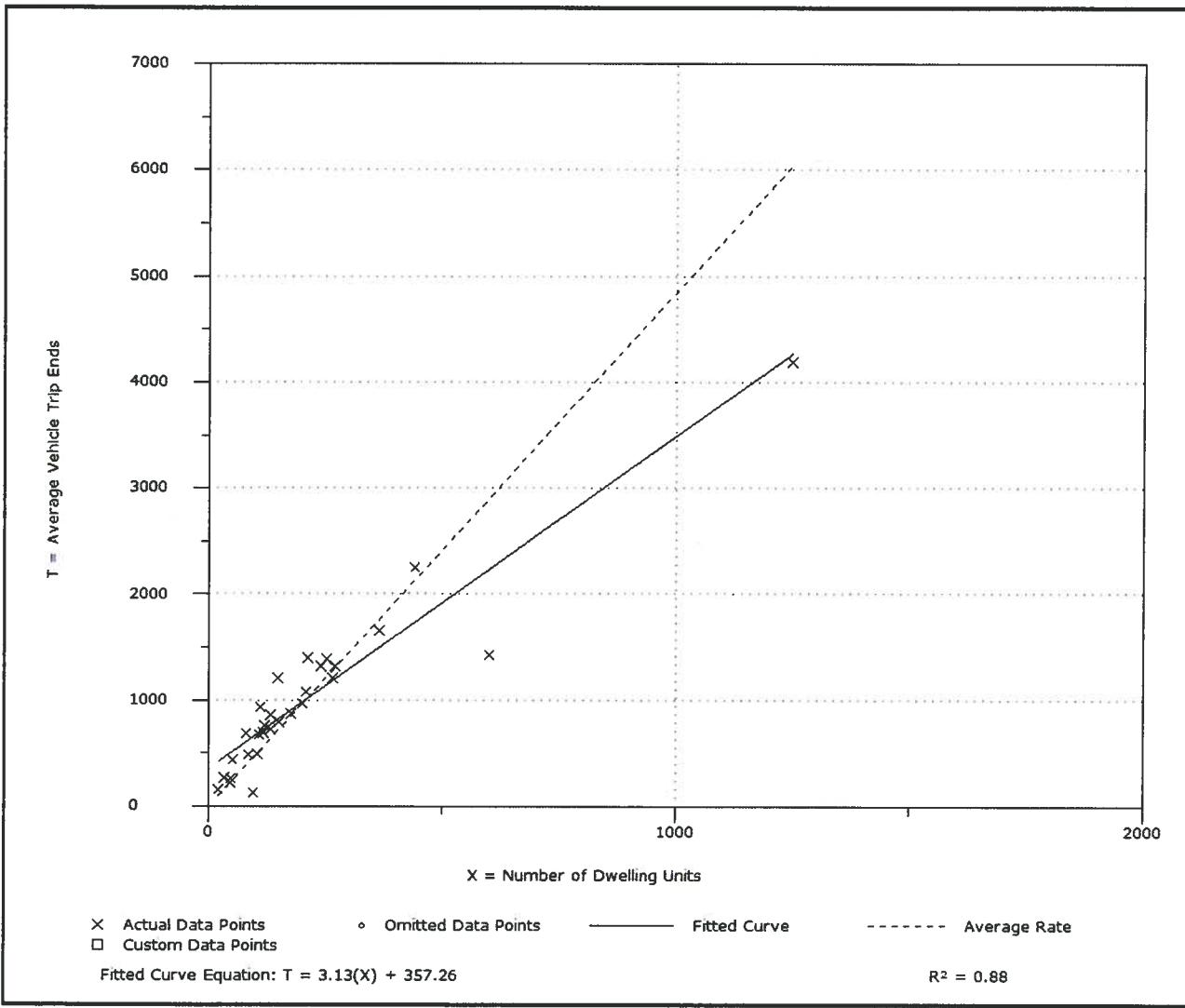
**Average Vehicle Trip Ends vs:**  
On a:      **Dwelling Units**  
                 **Sunday**

Number of Studies: 30  
Avg. Number of Dwelling Units: 209  
Directional Distribution: 50% entering, 50% exiting

## Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
4.84	1.36 - 8.56	2.71

## Data Plot and Equation

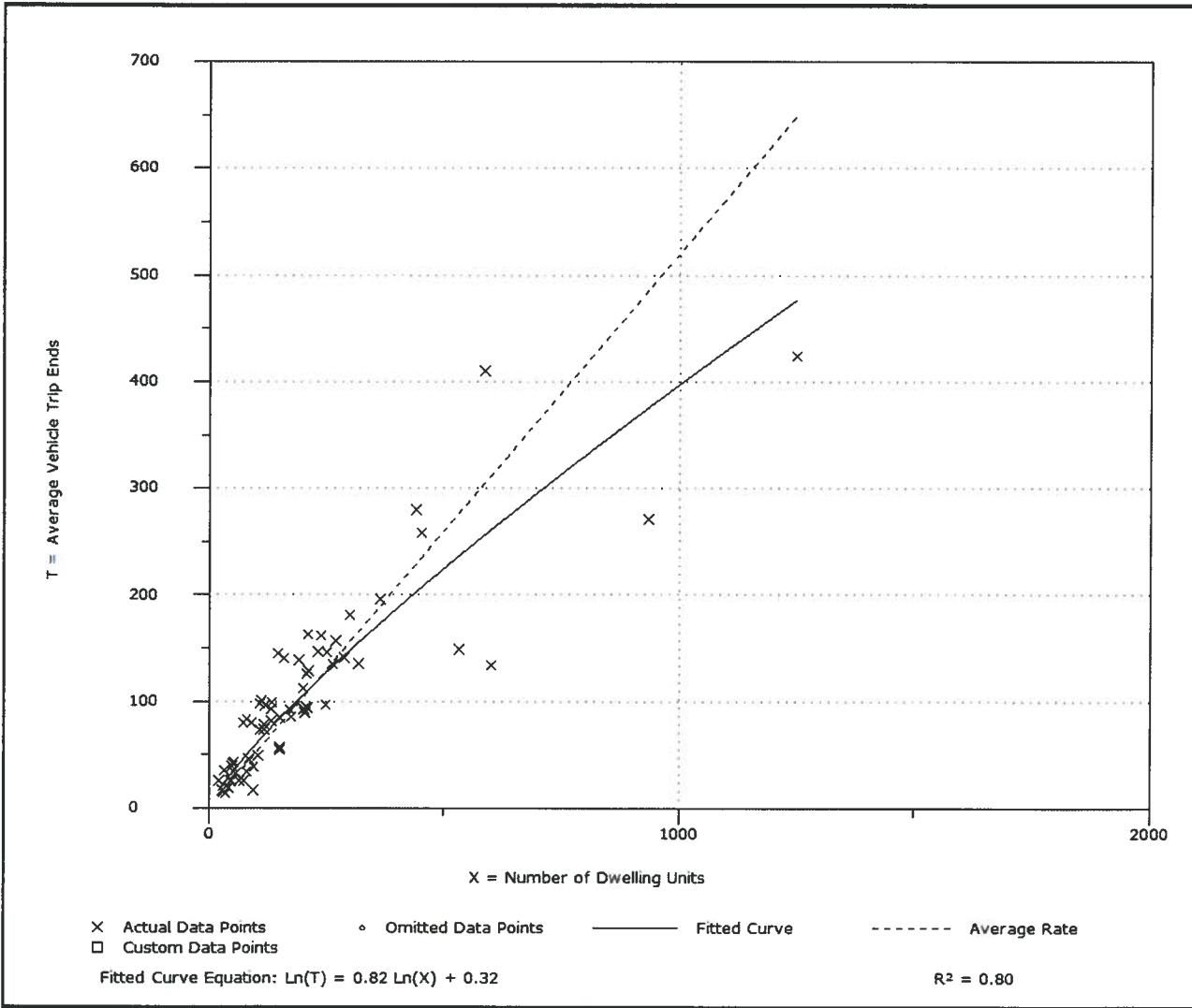


# Residential Condominium/Townhouse (230)

<b>Average Vehicle Trip Ends vs:</b>	<b>Dwelling Units</b>
<b>On a:</b>	<b>Weekday</b>
	<b>Peak Hour of Adjacent Street Traffic</b>
	<b>One Hour Between 4 and 6 p.m.</b>
Number of Studies:	62
Avg. Number of Dwelling Units:	205
Directional Distribution:	67% entering, 33% exiting

**Trip Generation per Dwelling Unit**

Average Rate	Range of Rates	Standard Deviation
0.52	0.18 - 1.24	0.75

**Data Plot and Equation**

## **Land Use: 310**

### **Hotel**

#### **Description**

Hotels are places of lodging that provide sleeping accommodations and supporting facilities such as restaurants, cocktail lounges, meeting and banquet rooms or convention facilities, limited recreational facilities (pool, fitness room), and/or other retail and service shops. Some of the sites included in this land use category are actually large motels providing the hotel facilities noted above. All suites hotel (Land Use 311), business hotel (Land Use 312), motel (Land Use 320) and resort hotel (Land Use 330) are related uses.

#### **Additional Data**

Studies of hotel employment density indicate that, on the average, a hotel will employ 0.9 employees per room.<sup>1</sup>

Thirty studies provided information on occupancy rates at the time the studies were conducted. The average occupancy rate for these studies was approximately 83 percent.

The hotels surveyed were primarily located outside central business districts in suburban areas.

Some properties contained in this land use provide guest transportation services such as airport shuttles, limousine service, or golf course shuttle service, which may have an impact on the overall trip generation rates.

The sites were surveyed between the late 1960s and the 2000s throughout the United States.

***For all lodging uses, it is important to collect data on occupied rooms as well as total rooms in order to accurately predict trip generation characteristics for the site.***

**Trip generation at a hotel may be related to the presence of supporting facilities such as convention facilities, restaurants, meeting/banquet space and retail facilities. Future data submissions should specify the presence of these amenities. Reporting the level of activity at the supporting facilities such as full, empty, partially active, number of people attending a meeting/banquet during observation may also be useful in further analysis of this land use.**

#### **Source Numbers**

4, 5, 12, 13, 18, 55, 72, 170, 187, 254, 260, 262, 277, 280, 301, 306, 357, 422, 436, 507, 577, 728

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<sup>1</sup> Buttke, Carl H. Unpublished studies of building employment densities, Portland, Oregon.

# Hotel (310)

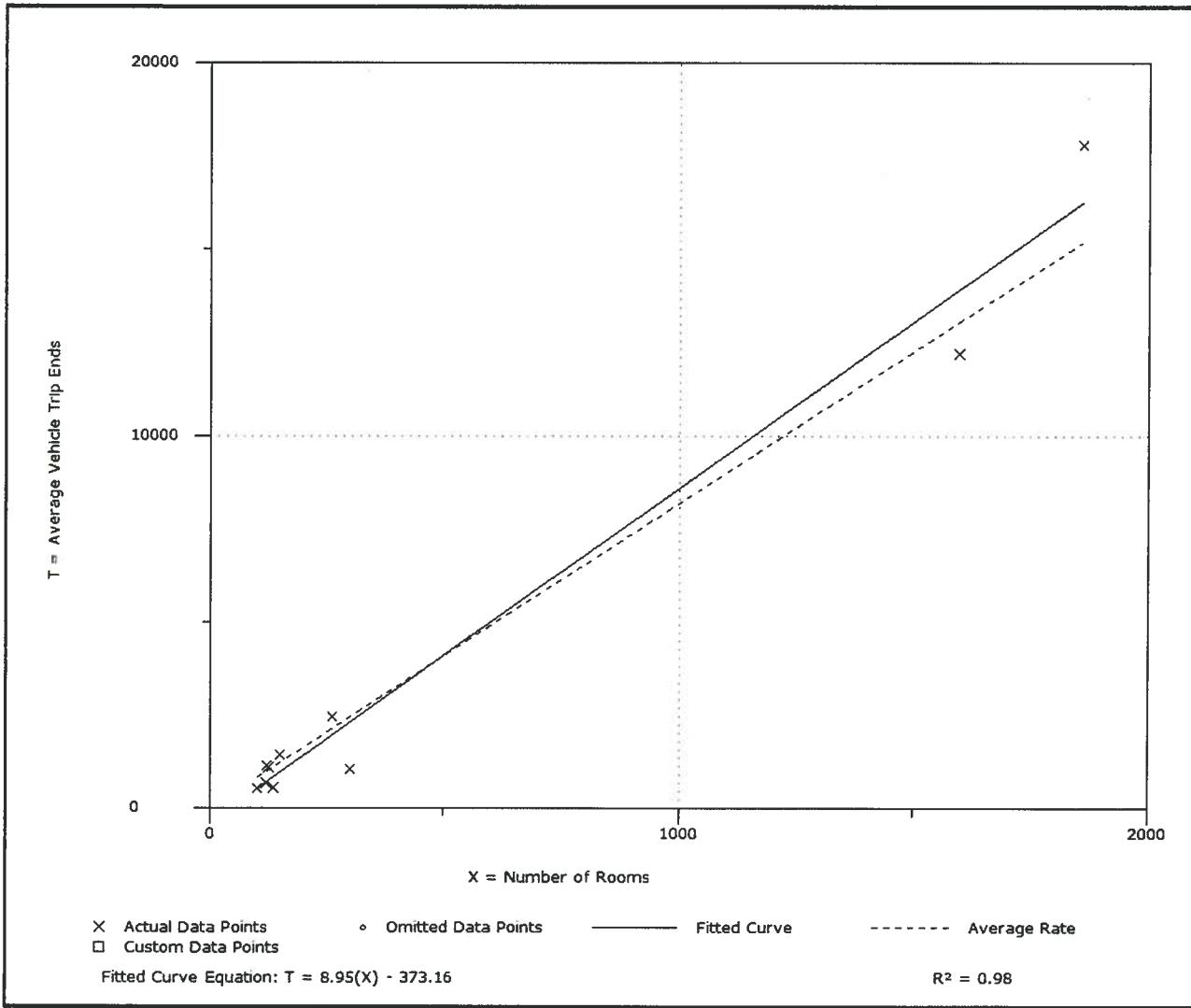
**Average Vehicle Trip Ends vs:      Rooms  
On a:      Weekday**

Number of Studies:      10  
Average Number of Rooms:      476  
Directional Distribution:      50% entering, 50% exiting

### **Trip Generation per Room**

Average Rate	Range of Rates	Standard Deviation
8.17	3.47 - 9.58	3.38

### **Data Plot and Equation**



# Hotel (310)

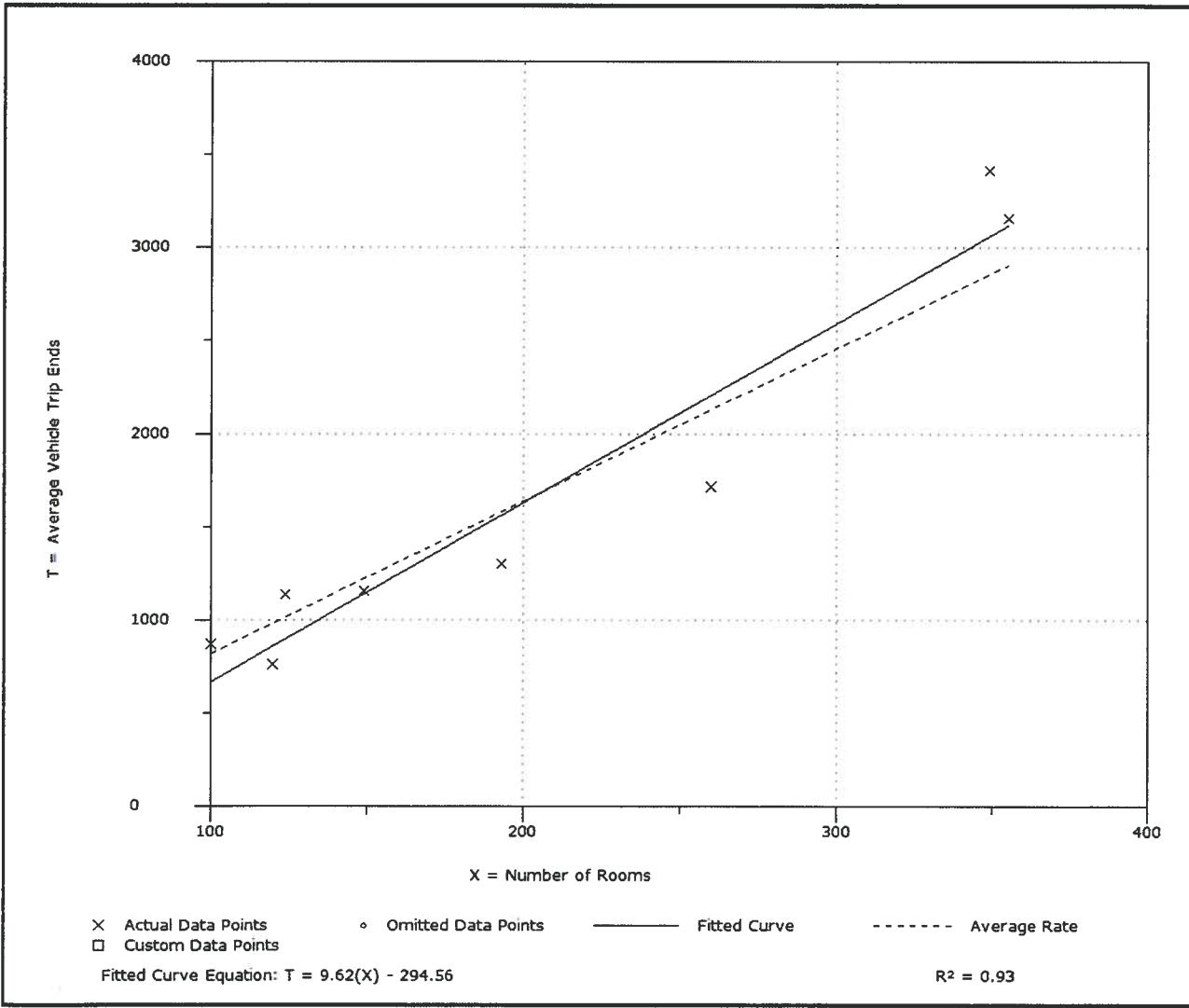
**Average Vehicle Trip Ends vs:**  
On a:      **Rooms**  
                 **Saturday**

Number of Studies: 8  
Average Number of Rooms: 206  
Directional Distribution: 50% entering, 50% exiting

### Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
8.19	6.35 - 9.79	3.13

### Data Plot and Equation



# Hotel (310)

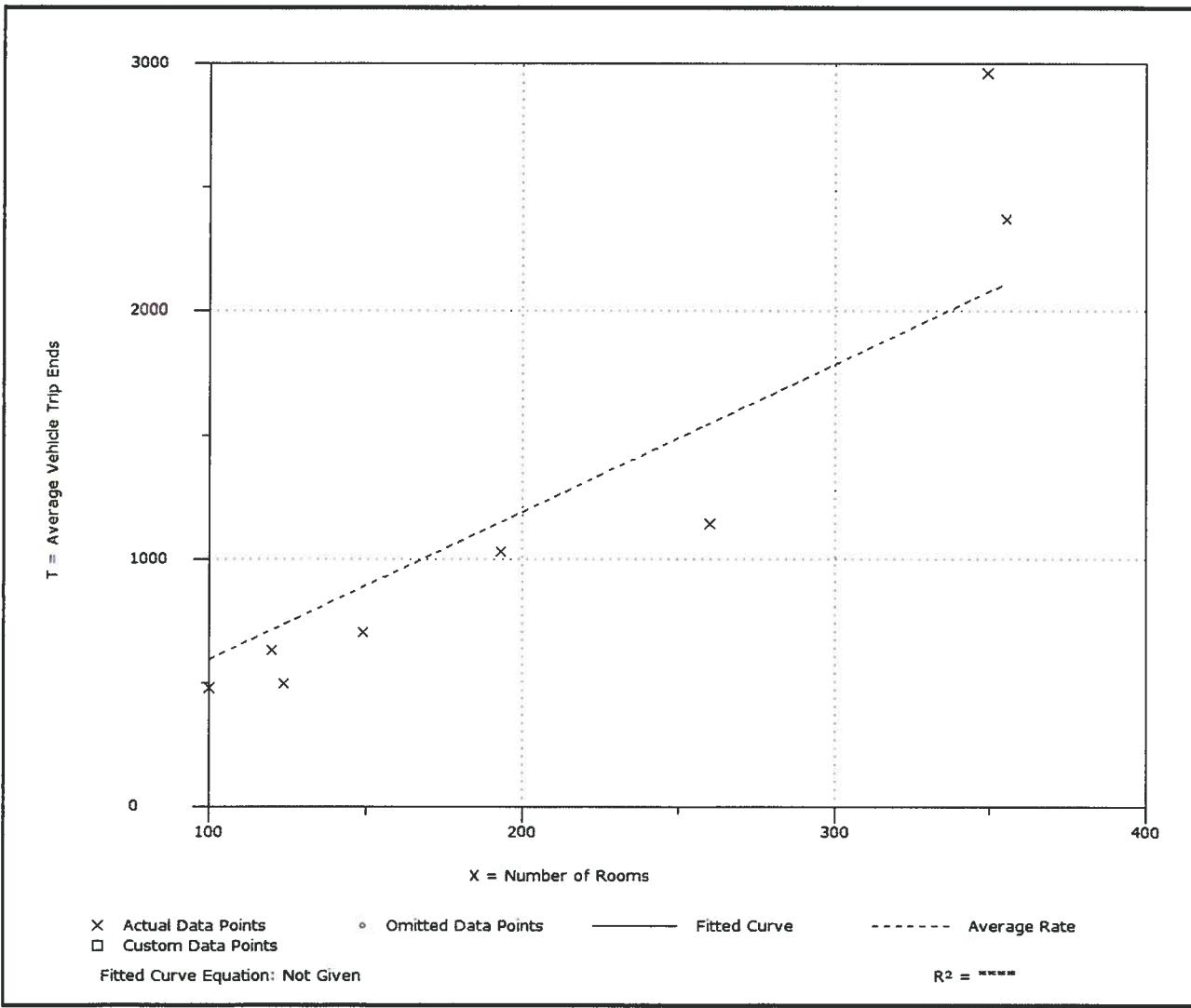
**Average Vehicle Trip Ends vs:**  
On a:      **Rooms**  
                 **Sunday**

Number of Studies: 8  
Average Number of Rooms: 206  
Directional Distribution: 50% entering, 50% exiting

### Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
5.95	4.01 - 8.48	2.89

### Data Plot and Equation



# Hotel (310)

**Average Vehicle Trip Ends vs:  
On a:**

**Rooms**

**Weekday**

**Peak Hour of Adjacent Street Traffic**

**One Hour Between 4 and 6 p.m.**

**Number of Studies:**

**33**

**Average Number of Rooms:**

**200**

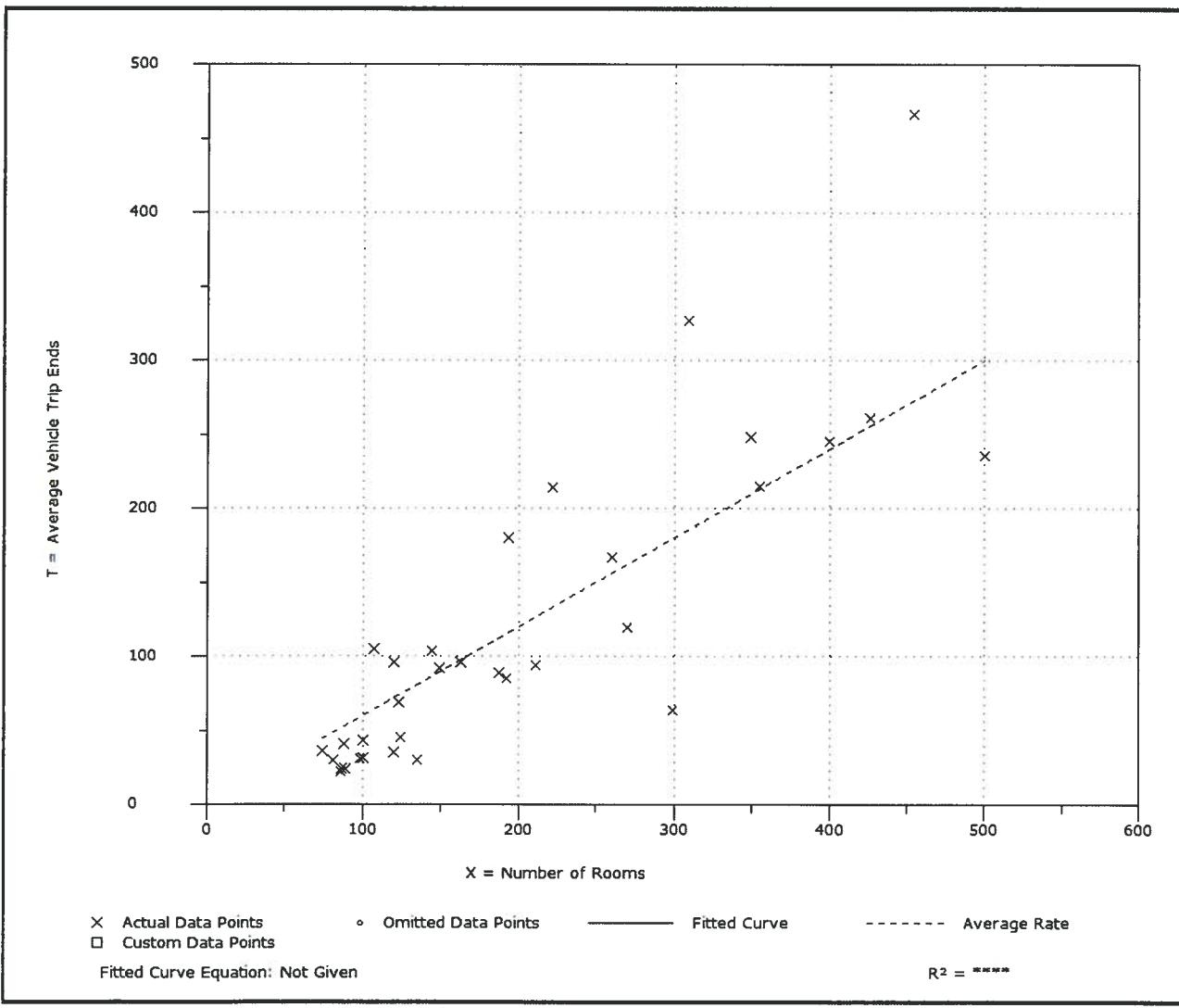
**Directional Distribution:**

**51% entering, 49% exiting**

## Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
0.60	0.21 - 1.06	0.81

## Data Plot and Equation



## **Land Use: 420**

### **Marina**

#### **Description**

Marinas are public or private facilities that provide docks and berths for boats and may include limited retail and restaurant space.

#### **Additional Data**

The number of boat berths ranged from 108 to 1,750; the number of acres ranged from 11 to 105; and the number of parking spaces ranged from 65 to 493.

The sites were surveyed between the late 1960s and the late 1980s in California and Washington.

#### **Source Numbers**

6, 12, 19, 101, 123, 265

# Marina (420)

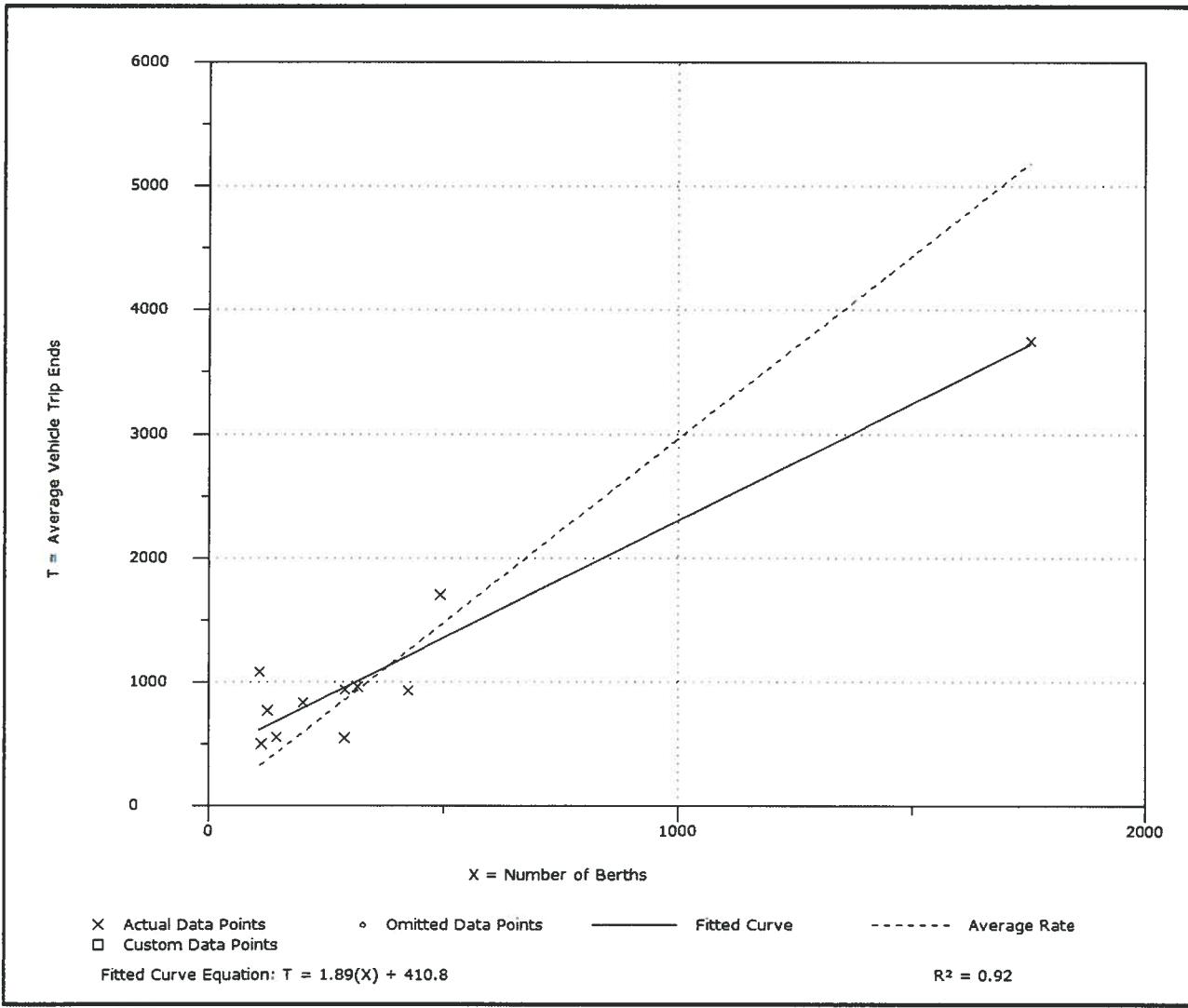
**Average Vehicle Trip Ends vs:**  
On a:      **Berths**  
                 **Weekday**

Number of Studies: 11  
 Average Number of Berths: 386  
 Directional Distribution: 50% entering, 50% exiting

## Trip Generation per Berth

Average Rate	Range of Rates	Standard Deviation
2.96	1.91 - 10.04	2.26

## Data Plot and Equation



# Marina

## (420)

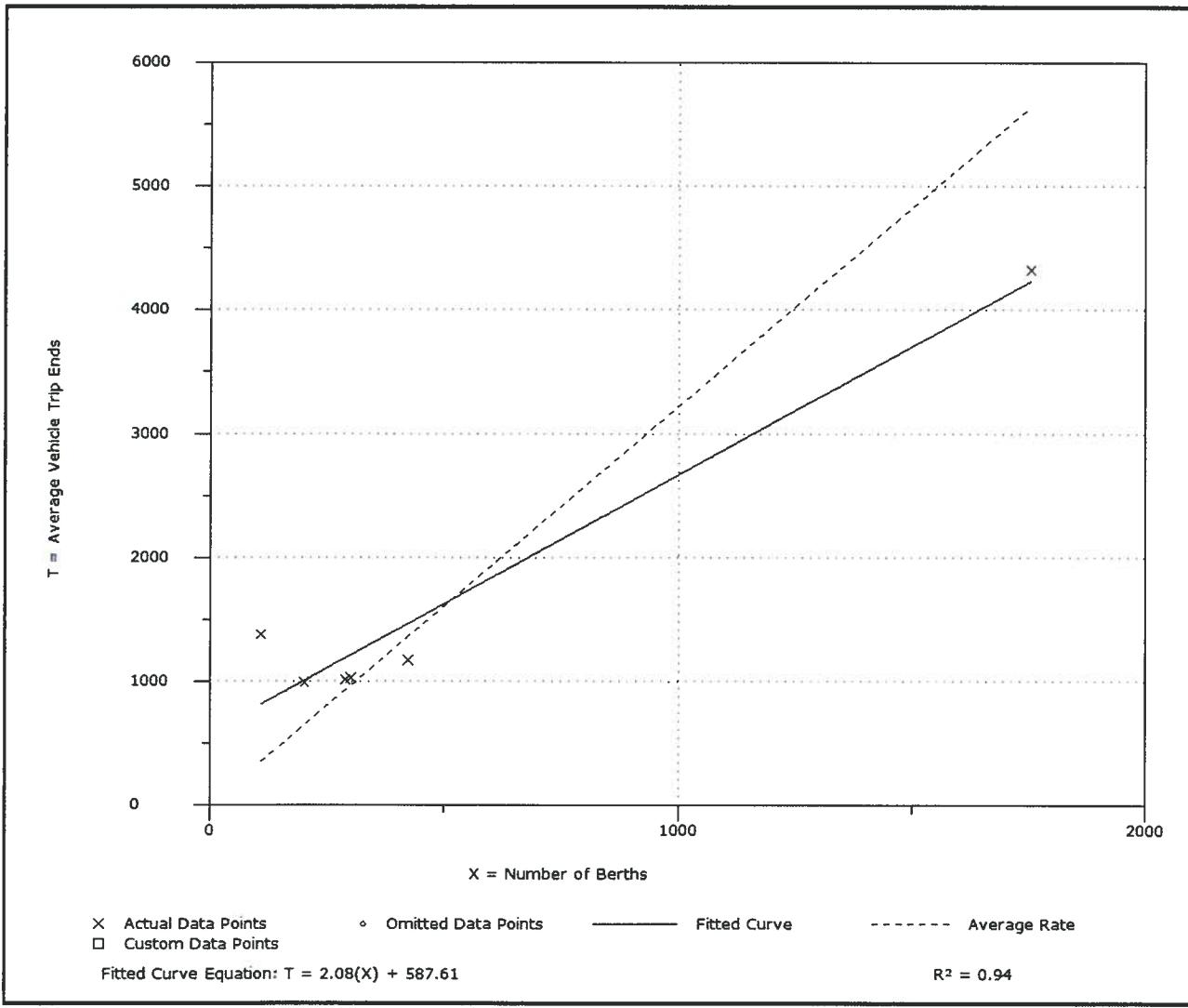
**Average Vehicle Trip Ends vs:**  
**Berths**  
**On a:** Saturday

Number of Studies: 6  
 Average Number of Berths: 512  
 Directional Distribution: 50% entering, 50% exiting

### Trip Generation per Berth

Average Rate	Range of Rates	Standard Deviation
3.22	2.47 - 12.78	2.64

### Data Plot and Equation



# Marina

## (420)

**Average Vehicle Trip Ends vs:**  
On a:      **Berths**  
                 **Sunday**

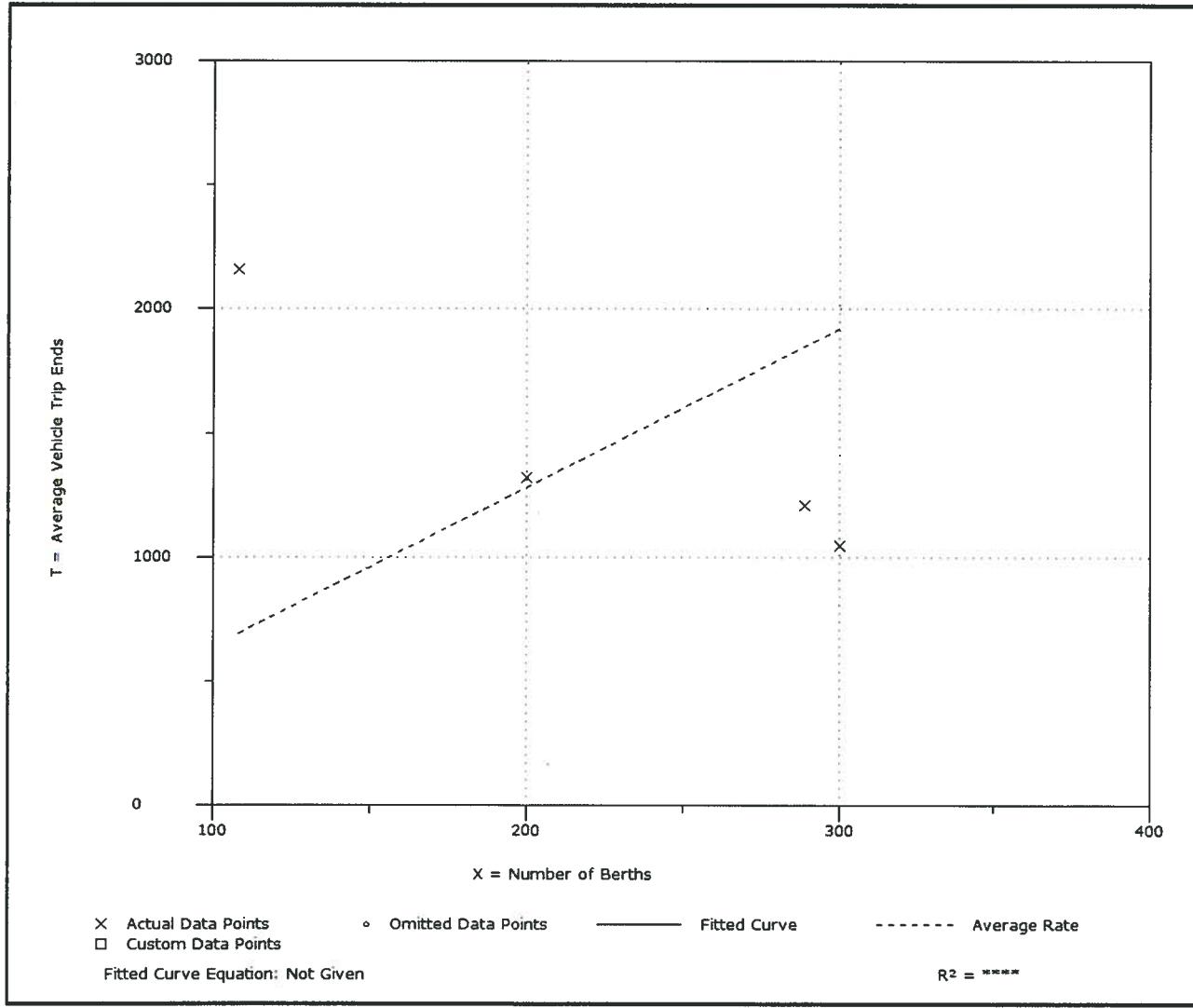
Number of Studies: 4  
Average Number of Berths: 224  
Directional Distribution: 50% entering, 50% exiting

### Trip Generation per Berth

Average Rate	Range of Rates	Standard Deviation
6.40	3.49 - 20.00	5.75

### Data Plot and Equation

*Caution - Use Carefully - Small Sample Size*



# Marina

## (420)

**Average Vehicle Trip Ends vs:  
On a:**

**Berths**

**Weekday**

**Peak Hour of Adjacent Street Traffic**

**One Hour Between 4 and 6 p.m.**

Number of Studies:  
Average Number of Berths:  
Directional Distribution:

2

362

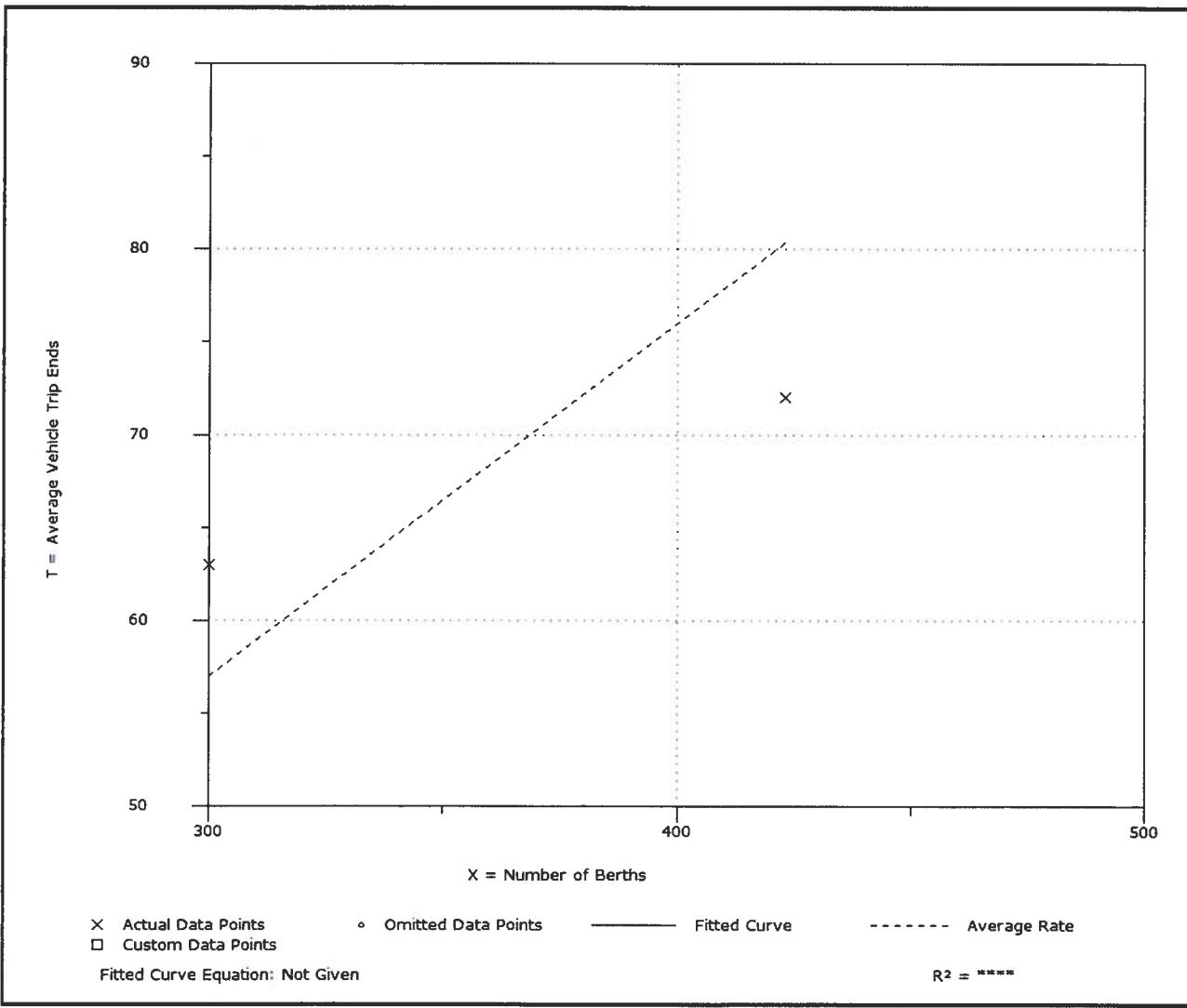
60% entering, 40% exiting

### Trip Generation per Berth

Average Rate	Range of Rates	Standard Deviation
0.19	0.17 - 0.21	*

### Data Plot and Equation

*Caution - Use Carefully - Small Sample Size*



## **Land Use: 931**

### **Quality Restaurant**

#### **Description**

This land use consists of high quality, full-service eating establishments with typical duration of stay of at least one hour. Quality restaurants generally do not serve breakfast; some do not serve lunch; all serve dinner. This type of restaurant often requests and sometimes requires reservations and is generally not part of a chain. Patrons commonly wait to be seated, are served by a waiter/waitress, order from menus and pay for meals after they eat. While some of the study sites have lounge or bar facilities (serving alcoholic beverages), they are ancillary to the restaurant. High-turnover (sit-down) restaurant (Land Use 932) is a related use.

#### **Additional Data**

Truck trips accounted for approximately 1 to 4 percent of the weekday traffic. The average for the sites that were surveyed was approximately 1.6 percent.

Vehicle occupancy ranged from 1.59 to 1.98 persons per automobile on an average weekday. The average for the sites that were surveyed was approximately 1.78.

The outdoor seating area is not included in the overall gross floor area. Therefore, the number of seats may be a more reliable independent variable on which to establish trip generation rates for facilities having significant outdoor seating.

The sites were surveyed between the 1970s and the 1990s throughout the United States.

#### **Source Numbers**

13, 73, 88, 90, 98, 100, 126, 172, 260, 291, 301, 338, 339, 368, 437, 440

# Quality Restaurant (931)

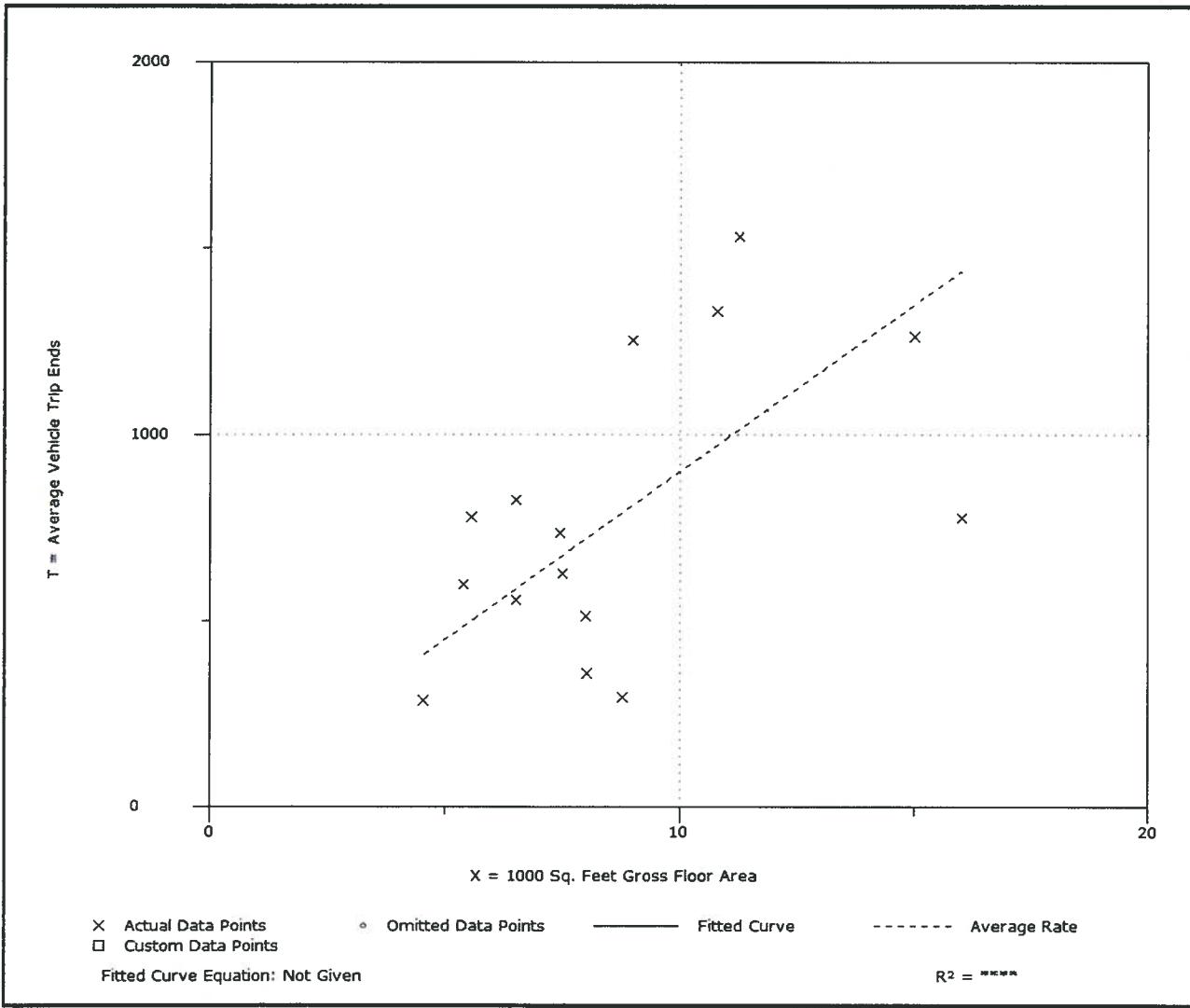
**Average Vehicle Trip Ends vs:  
On a: 1000 Sq. Feet Gross Floor Area  
Weekday**

Number of Studies: 15  
Average 1000 Sq. Feet GFA: 9  
Directional Distribution: 50% entering, 50% exiting

## **Trip Generation per 1000 Sq. Feet Gross Floor Area**

Average Rate	Range of Rates	Standard Deviation
89.95	33.41 - 139.80	36.81

## **Data Plot and Equation**



# Quality Restaurant (931)

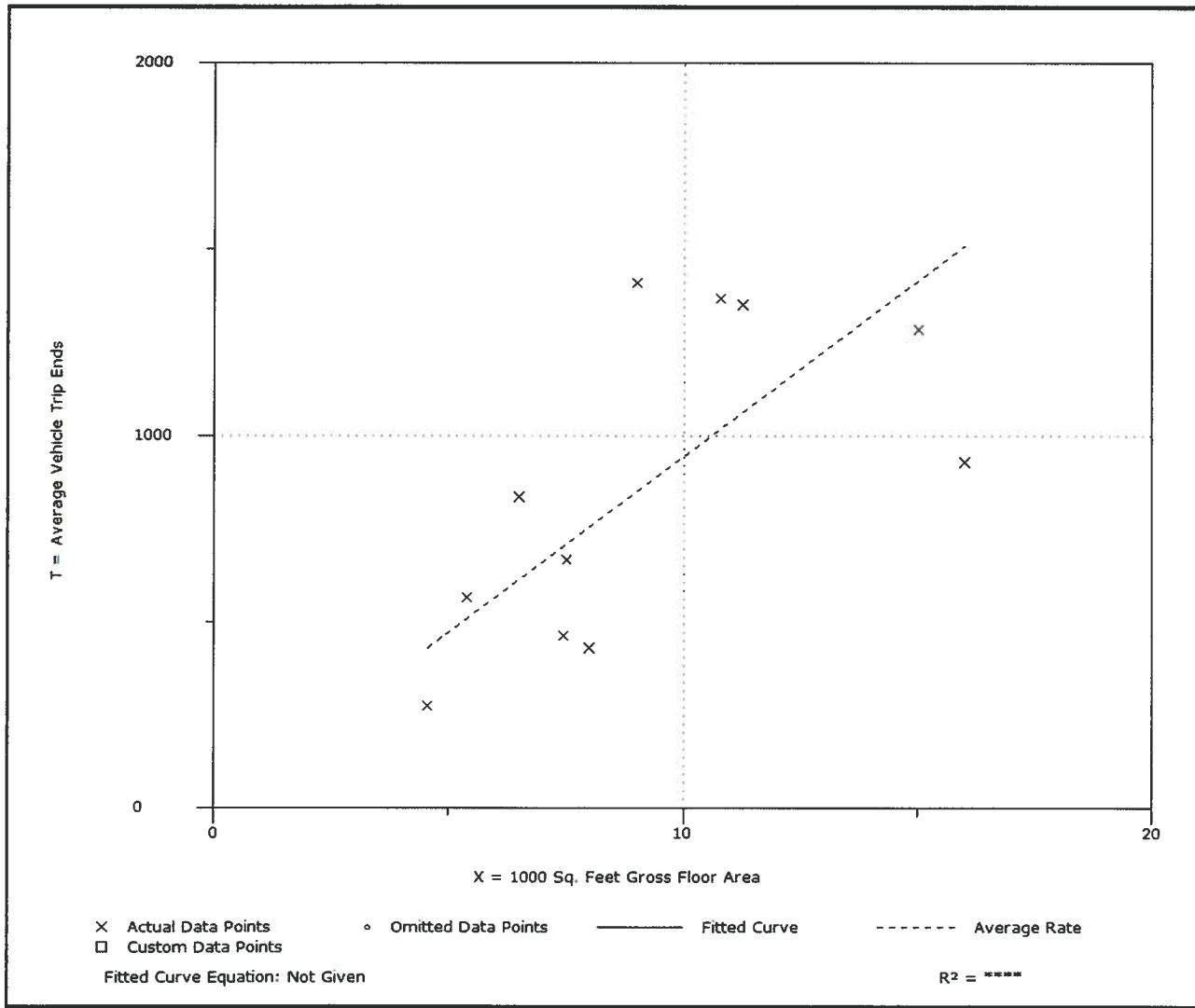
**Average Vehicle Trip Ends vs:  
On a: 1000 Sq. Feet Gross Floor Area  
Saturday**

Number of Studies: 11  
Average 1000 Sq. Feet GFA: 9  
Directional Distribution: 50% entering, 50% exiting

## **Trip Generation per 1000 Sq. Feet Gross Floor Area**

Average Rate	Range of Rates	Standard Deviation
94.36	53.63 - 156.67	34.42

## **Data Plot and Equation**



# Quality Restaurant (931)

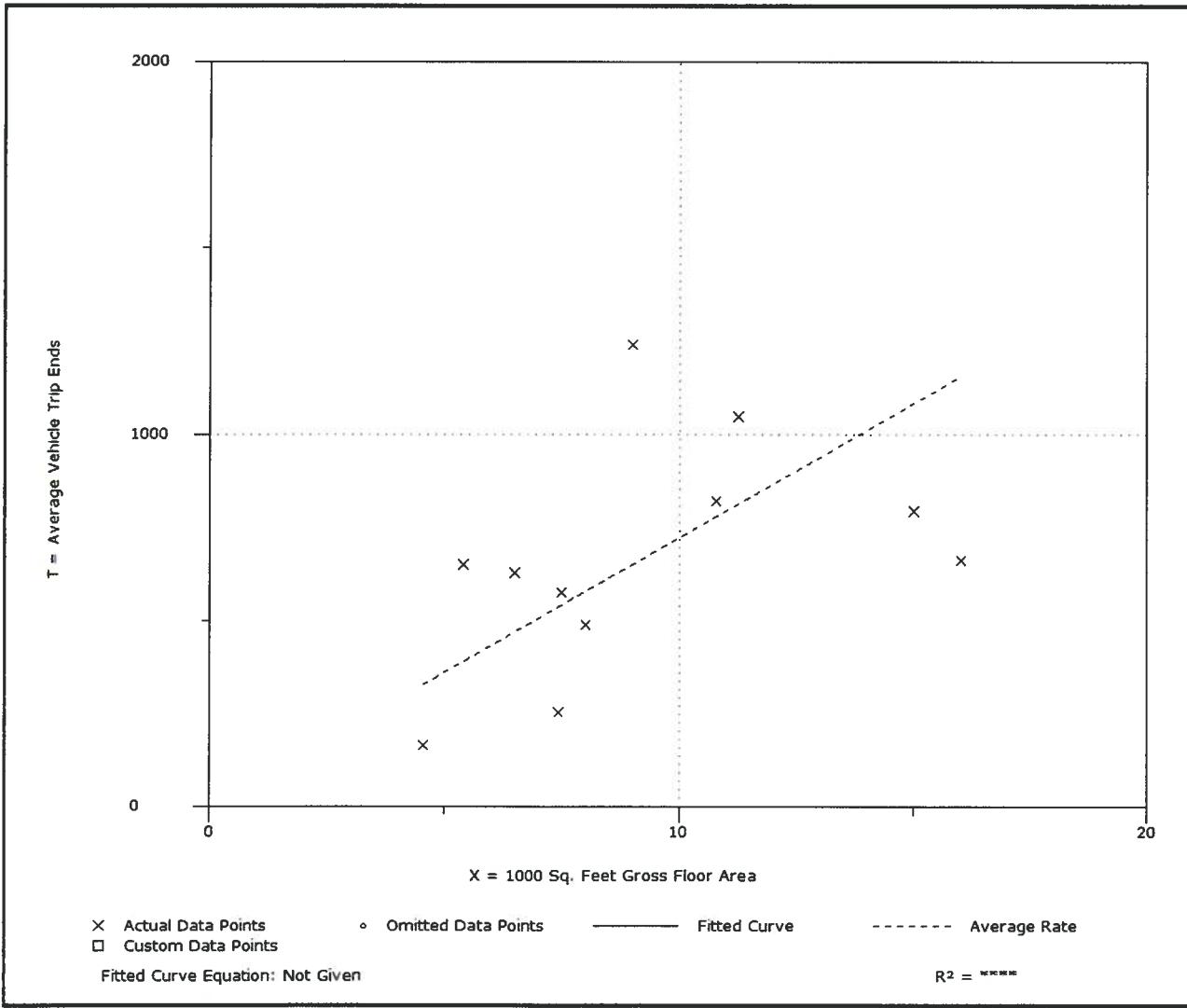
**Average Vehicle Trip Ends vs:  
On a: 1000 Sq. Feet Gross Floor Area  
Sunday**

Number of Studies: 11  
Average 1000 Sq. Feet GFA: 9  
Directional Distribution: 50% entering, 50% exiting

### **Trip Generation per 1000 Sq. Feet Gross Floor Area**

Average Rate	Range of Rates	Standard Deviation
72.16	34.09 - 137.78	32.35

### **Data Plot and Equation**



# Quality Restaurant (931)

**Average Vehicle Trip Ends vs:  
On a:**

**1000 Sq. Feet Gross Floor Area**

**Weekday**

**Peak Hour of Adjacent Street Traffic**

**One Hour Between 4 and 6 p.m.**

Number of Studies:

Average 1000 Sq. Feet GFA:

Directional Distribution:

24

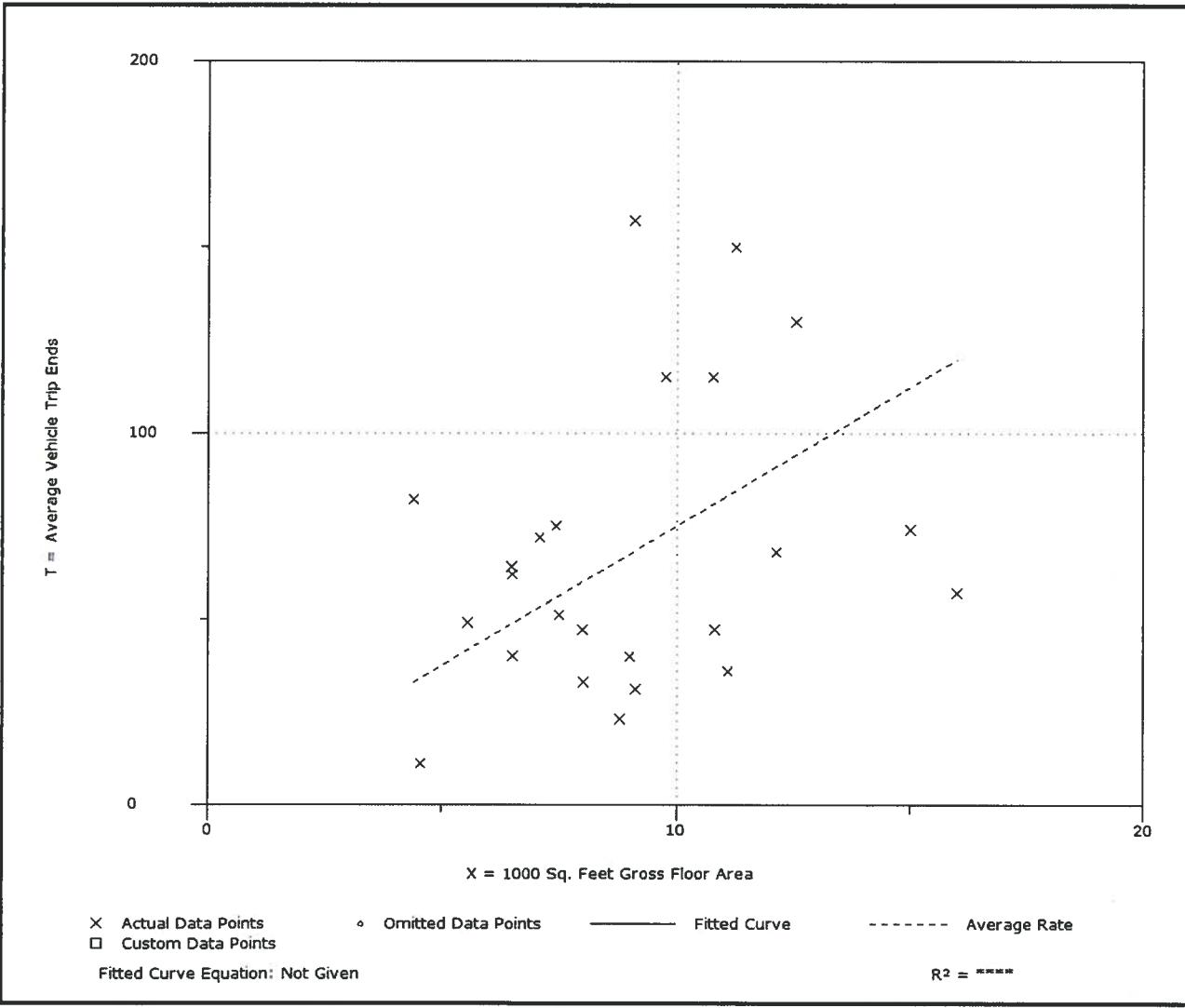
9

67% entering, 33% exiting

## Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
7.49	2.42 - 18.64	4.89

## Data Plot and Equation



## **Appendix F**

### **FDOT Peak Season Conversion Factors**

2012 PEAK SEASON FACTOR CATEGORY REPORT - REPORT TYPE: ALL  
 CATEGORY: 9000 MONROE COUNTYWIDE

MOCF: 0.91  
 PSCF

WEEK	DATES	SF	
1	01/01/2012 - 01/07/2012	1.03	1.13
2	01/08/2012 - 01/14/2012	1.00	1.10
3	01/15/2012 - 01/21/2012	0.97	1.06
* 4	01/22/2012 - 01/28/2012	0.95	1.04
* 5	01/29/2012 - 02/04/2012	0.94	1.03
* 6	02/05/2012 - 02/11/2012	0.92	1.01
* 7	02/12/2012 - 02/18/2012	0.91	1.00
* 8	02/19/2012 - 02/25/2012	0.90	0.99
* 9	02/26/2012 - 03/03/2012	0.89	0.97
*10	03/04/2012 - 03/10/2012	0.88	0.96
*11	03/11/2012 - 03/17/2012	0.87	0.95
*12	03/18/2012 - 03/24/2012	0.89	0.97
*13	03/25/2012 - 03/31/2012	0.90	0.99
*14	04/01/2012 - 04/07/2012	0.92	1.01
*15	04/08/2012 - 04/14/2012	0.94	1.03
*16	04/15/2012 - 04/21/2012	0.96	1.05
17	04/22/2012 - 04/28/2012	0.96	1.05
18	04/29/2012 - 05/05/2012	0.97	1.06
19	05/06/2012 - 05/12/2012	0.98	1.07
20	05/13/2012 - 05/19/2012	0.99	1.08
21	05/20/2012 - 05/26/2012	0.99	1.08
22	05/27/2012 - 06/02/2012	1.00	1.10
23	06/03/2012 - 06/09/2012	1.00	1.10
24	06/10/2012 - 06/16/2012	1.01	1.11
25	06/17/2012 - 06/23/2012	1.00	1.10
26	06/24/2012 - 06/30/2012	0.99	1.08
27	07/01/2012 - 07/07/2012	0.98	1.07
28	07/08/2012 - 07/14/2012	0.97	1.06
29	07/15/2012 - 07/21/2012	0.96	1.05
30	07/22/2012 - 07/28/2012	0.99	1.08
31	07/29/2012 - 08/04/2012	1.01	1.11
32	08/05/2012 - 08/11/2012	1.04	1.14
33	08/12/2012 - 08/18/2012	1.07	1.17
34	08/19/2012 - 08/25/2012	1.09	1.19
35	08/26/2012 - 09/01/2012	1.11	1.22
36	09/02/2012 - 09/08/2012	1.13	1.24
37	09/09/2012 - 09/15/2012	1.15	1.26
38	09/16/2012 - 09/22/2012	1.14	1.25
39	09/23/2012 - 09/29/2012	1.13	1.24
40	09/30/2012 - 10/06/2012	1.12	1.23
41	10/07/2012 - 10/13/2012	1.11	1.22
42	10/14/2012 - 10/20/2012	1.10	1.20
43	10/21/2012 - 10/27/2012	1.09	1.19
44	10/28/2012 - 11/03/2012	1.08	1.18
45	11/04/2012 - 11/10/2012	1.07	1.17
46	11/11/2012 - 11/17/2012	1.07	1.17
47	11/18/2012 - 11/24/2012	1.06	1.16
48	11/25/2012 - 12/01/2012	1.05	1.15
49	12/02/2012 - 12/08/2012	1.04	1.14
50	12/09/2012 - 12/15/2012	1.03	1.13
51	12/16/2012 - 12/22/2012	1.01	1.11
52	12/23/2012 - 12/29/2012	0.99	1.08
53	12/30/2012 - 12/31/2012	0.97	1.06

\* PEAK SEASON

08-FEB-2013 12:30:18

830UPD [1,0,0,1] 6\_9000\_PKSEASON.TXT

## **Appendix G**

### **Intersection Turning Movement Volume Spreadsheets**

FUTURE TURNING MOVEMENT VOLUME ANALYSIS

**US 1 / Overseas Highway and Key Haven Road  
PM Peak Hour**

Description	Key Haven Road			Key Haven Road			US 1			US 1		
	Northbound		Southbound	Eastbound		Through	Right	Westbound		Through	Right	
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Right	
Existing Traffic (4/10/2013) Season Adjustment Factor	0 1.03	0 1.03	0 1.03	14 1.03	0 1.03	121 1.03	157 1.03	1,224 1.03	0 1.03	1 1.03	840 1.03	24 1.03
2013 Peak Season Traffic	0 0	0 0	0 0	14 0	0 0	125 0	162 0	1,261 0	0 0	1 1	865 865	25 25
Annual Growth Rate	1.00% 0.00%	1.00% 0.00%	1.00% 0.00%	1.00% 0.00%	1.00% 0.00%	1.00% 0.00%	1.00% 0.00%	1.00% 0.00%	1.00% 0.00%	1.00% 1.00%	1.00% 1.00%	1.00% 1.00%
<b>Committed Projects:</b> CVS Pharmacy	0 0	0 0	0 0	0 0	0 0	1 1	1 1	6 0	0 0	0 0	6 0	0 0
2015 Background Traffic	0 0	0 0	0 0	15 0	0 0	128 128	166 166	1,292 1,292	0 0	1 1	889 889	25 25
New Project Trips	0 0	0 0	0 0	0 0	0 0	0 0	0 0	5 5	0 0	0 0	13 13	0 0
<b>2015 Total Traffic</b>	<b>0 0</b>	<b>0 0</b>	<b>0 0</b>	<b>15 15</b>	<b>0 0</b>	<b>128 128</b>	<b>166 166</b>	<b>1,297 1,297</b>	<b>0 0</b>	<b>1 1</b>	<b>902 902</b>	<b>25 25</b>

**FUTURE TURNING MOVEMENT VOLUME ANALYSIS**

**US 1 / Overseas Highway and College Road (East)  
PM Peak Hour**

Description	College Road (East)			College Road (East)			US 1			US 1		
	Northbound		Southbound	Eastbound		Through	Left	Through	Right	Left	Through	Right
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (4/10/2013) Season Adjustment Factor	0 1.03	0 1.03	0 1.03	37 1.03	0 1.03	74 1.03	123 1.03	1,388 1.03	0 1.03	0 1.03	755 1.03	45 1.03
2013 Peak Season Traffic	0	0	0	38	0	76	127	1,430	0	0	778	46
Annual Growth Rate	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%
<b>Committed Projects:</b> CVS Pharmacy	0	0	0	0	0	1	1	7	0	0	7	0
2015 Background Traffic	0	0	0	39	0	79	130	1,465	0	0	800	47
New Project Trips	0	0	0	0	0	0	0	5	0	0	13	0
<b>2015 Total Traffic</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>39</b>	<b>0</b>	<b>79</b>	<b>130</b>	<b>1,470</b>	<b>0</b>	<b>0</b>	<b>813</b>	<b>47</b>

**FUTURE TURNING MOVEMENT VOLUME ANALYSIS**

**US 1 / Overseas Highway and 3rd Street  
PM Peak Hour**

Description	3rd Street Northbound				3rd Street Southbound				US 1 Eastbound				US 1 Westbound			
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left
Existing Traffic (4/10/2013) Season Adjustment Factor	12 1.03	0 1.03	190 1.03	0 1.03	0 1.03	0 1.03	0 1.03	1,295 1.03	17 1.03	127 1.03	799 1.03	0 1.03	0 1.03	0 1.03	0 1.03	
2013 Peak Season Traffic	12	0	196	0	0	0	0	1,334	18	131	823	0				
Annual Growth Rate	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%
<b>Committed Projects:</b> CVS Pharmacy	44	0	28	0	0	0	0	-20	47	25	-17	0				
2015 Background Traffic	57	0	228	0	0	0	0	1,341	65	158	823	0				
New Project Trips	0	0	5	0	0	0	0	0	0	13	0	0				
<b>2015 Total Traffic</b>	<b>57</b>	<b>0</b>	<b>233</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,341</b>	<b>65</b>	<b>171</b>	<b>823</b>	<b>0</b>				

**FUTURE TURNING MOVEMENT VOLUME ANALYSIS**

**US 1 / Overseas Highway and MacDonald Avenue  
PM Peak Hour**

Description	MacDonald Ave Northbound			MacDonald Ave Southbound			US 1 Eastbound			US 1 Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (3/12/2013) Season Adjustment Factor	398 1.03	0 1.03	0 1.03	0 1.03	0 1.03	0 1.03	0 1.03	1,314 1.03	427 1.03	0 1.03	845 1.03	0 1.03
2013 Peak Season Traffic	410	0	0	0	0	0	0	1,353	440	0	870	0
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
<b>Committed Projects:</b> CVS Pharmacy	0	0	0	0	0	0	0	27	0	0	27	0
<b>2015 Background Traffic</b>	<b>418</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,408</b>	<b>449</b>	<b>0</b>	<b>915</b>	<b>0</b>
New Project Trips	18	0	0	0	0	0	0	0	47	0	0	0
<b>2015 Total Traffic</b>	<b>436</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,408</b>	<b>496</b>	<b>0</b>	<b>915</b>	<b>0</b>

**FUTURE TURNING MOVEMENT VOLUME ANALYSIS**

**US 1 / Overseas Highway and Cross Street  
PM Peak Hour**

<b>Description</b>	<b>Cross Street Northbound</b>				<b>Cross Street Southbound</b>				<b>US 1 Eastbound</b>				<b>US 1 Westbound</b>			
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
Existing Traffic (3/12/2013) Season Adjustment Factor	207 1.03	0 1.03	41 1.03	0 1.03	0 1.03	0 1.03	0 1.03	1.728 1.03	255 1.03	37 1.03	1,134 1.03	0 1.03				
2013 Peak Season Traffic	213	0	42	0	0	0	0	1,780	263	38	1,168	0				
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
<b>Committed Projects:</b> CVS Pharmacy	0	0	0	0	0	0	0	27	0	0	0	27	0			
2015 Background Traffic	217	0	43	0	0	0	0	1,843	268	39	1,218	0				
New Project Trips	0	0	0	0	0	0	0	47	0	0	0	18	0			
<b>2015 Total Traffic</b>	<b>217</b>	<b>0</b>	<b>43</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,890</b>	<b>268</b>	<b>39</b>	<b>1,236</b>	<b>0</b>				

**FUTURE TURNING MOVEMENT VOLUME ANALYSIS**

**US 1 / Overseas Highway and College Road (West)**  
**PM Peak Hour**

<b>Description</b>	College Road (West)			College Road (West)			US 1			US 1		
	Northbound		Southbound	Eastbound		Through	Right	Westbound		Left	Through	Right
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (3/12/2013) Season Adjustment Factor	0 1.03	0 1.03	0 1.03	92 1.03	0 1.03	234 1.03	193 1.03	1,783 1.03	0 1.03	0 1.03	1,390 1.03	27 1.03
2013 Peak Season Traffic	0	0	0	95	0	241	199	1,836	0	0	1,432	28
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
<b>Committed Projects:</b>												
CVS Pharmacy	0	0	0	1	0	0	0	26	0	0	26	1
<b>2015 Background Traffic</b>	0	0	0	98	0	246	203	1,899	0	0	1,486	29
New Project Trips	0	0	0	0	0	0	0	47	0	0	18	0
<b>2015 Total Traffic</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>98</b>	<b>0</b>	<b>246</b>	<b>203</b>	<b>1,946</b>	<b>0</b>	<b>0</b>	<b>1,504</b>	<b>29</b>

## **Appendix H**

### **Signal Timing Data**

TABLE 4 (Continued)  
RECOMMENDED CONTROLLER TIMINGS

INTERSECTION: US 1 & MACDONALD AVENUE		COORDINATE TIMING									
BASIC FUNCTIONS		PH. NO:	RING 1				RING 2				IMPLEMENTATION SCHEDULE
INTERVAL	TYPE		1	2	3	4	5	6	7	8	
INITIAL	WB		NS								
PASSAGE	10		20								
YELLOW CLEAR	2.5		3.0								
RED CLEAR	4.0		4.0								
MAX GREEN 1	1.0		1.0								
MAX GREEN 2	25		50								
WALK	7		7								
PED CLEAR	13		5								
MIN RECALL		X									
MAX RECALL											
PED RECALL											
DET NON-H.LOCK											
CNA1		X									
CNA2											
FLASHING WALK											
PHASE OMIT											
PED OMIT											
SOFT RECALL											
COORDINATION FUNCTIONS		PH. NO:	RING 1				RING 2				IMPLEMENTATION SCHEDULE
TIMING PATTERN	CYCLE OFFSET		1	2	3	4	5	6	7	8	
1	100	0	WB	NS							
2	110	0	28	82							
3			27	73							
4											
5											
6											

COORDINATION FUNCTIONS

TIMING PATTERN	CYCLE OFFSET	RING 1				RING 2				IMPLEMENTATION SCHEDULE
		1	2	3	4	5	6	7	8	
1	0	WB	NS							
2	0	28	82							
3	3	27	73							
4										
5										
6										

IMPLEMENTATION  
SCHEDULE

DAY

TIME

M - F

7:30 - 09:30

M - F

6:30 - 18:30

Mr. D.  
John Doe

210.4

TABLE 4 (Continued)  
RECOMMENDED CONTROLLER TIMINGS

INTERSECTION: US 1 & CROSS STREET		CONTROLLER SETTINGS									
BASIC FUNCTIONS		PH: NO:	RING 1				RING 2				IMPLEMENTATION SCHEDULE
INTERVAL	TYPE		1	2	3	4	5	6	7	8	
INITIAL	WB		NS								
PASSAGE	10	20									
YELLOW CLEAR	2.6	3.0									
RED CLEAR	4.0	4.0									
MAX GREEN 1	1.0	1.0									
MAX GREEN 2	25	50									
WALK	7	7									
PED CLEAR	13	9									
MIN RECALL	X										
MAX RECALL											
PED RECALL											
DET NON-LOCK											
CNA1	X										
CNA2											
FLASHING WALK											
PHASE OMIT											
PED OMIT											
SOFT RECALL											
COORDINATION FUNCTIONS		PH: NO:	RING 1				RING 2				IMPLEMENTATION SCHEDULE
TIME PATTERN	CYCLE		1	2	3	4	5	6	7	8	
1	110	87	WB	NS							
2	100	94	31	78							
3			27	73							
4											
5											
6											

MPL

TABLE 4 (Continued)  
RECOMMENDED CONTROLLER TIMINGS

CONSTRUCTION

INTERSECTION: US 1 & COLLEGE ROAD

BASIC FUNCTIONS

INTERVAL TYPE	PH. NO:	RING 1				RING 2			
		1	2	3	4	5	6	7	8
INITIAL	NBL	6B				NB			EB
PASSAGE	5	20				20			10
YELLOW CLEAR	2.0	3.0				3.0			2.5
RED CLEAR	3.5	4.0				4.0			4.0
MAX GREEN 1	1.0	1.0				1.0			2.0
MAX GREEN 2	10	50				50			20
WALK		7							
PED CLEAR		8							
MIN RECALL		X							
MAX RECALL									
PED RECALL									
DET NON-LOCK									
CNA1		X							
CNA2									
FLASHING WALK									
PHASE OMIT									
PED OMIT									
SOFT RECALL									

COORDINATION FUNCTIONS

TIMING PATTERN	PH. NO:	RING 1				RING 2			
		1	2	3	4	5	6	7	8
1	NBL	6B				NB			EB
2	110	63	65	60	55	50	45	40	35
2	100	62	65	60	55	50	45	40	35
3									
4									
5									
6									

IMPLEMENTATION  
SCHEDULE

DAY

TIME

M-F

7:30 - 09:30

M-F

8:30 - 16:30

*YJL  
21/2/00*

# **Appendix I**

## **SYNCHRO Output**

**Existing (2013) PM Peak Hour  
SYNCHRO Output**

# HCM Unsignalized Intersection Capacity Analysis

23: US 1 / Overseas & Key Haven Rd

5/10/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	2	1	1	2	1	0	0	0	1	0	1
Volume (veh/h)	157	1224	0	1	840	24	0	0	0	14	0	121
Sign Control	Free				Free			Stop			Stop	
Grade	0%				0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.92	0.92	0.82	0.82	0.92	0.92	0.92	0.81	0.92	0.81
Hourly flow rate (vph)	167	1302	0	1	1024	29	0	0	0	17	0	149
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	Raised			Raised								
Median storage veh	1			1								
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1054			1302			2300	2692	651	2012	2663	512
vC1, stage 1 conf vol							1636	1636		1027	1027	
vC2, stage 2 conf vol							664	1056		985	1636	
vCu, unblocked vol	1054			1302			2300	2692	651	2012	2663	512
tC, single (s)	4.1			4.1			7.5	6.5	6.9	*4.5	6.5	*4.5
tC, 2 stage (s)							6.5	5.5		3.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	75			100			100	100	100	94	100	79
cM capacity (veh/h)	656			528			53	64	411	304	83	721
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	SB 1	SB 2			
Volume Total	167	651	651	1	512	512	29	17	149			
Volume Left	167	0	0	1	0	0	0	17	0			
Volume Right	0	0	0	0	0	0	29	0	149			
cSH	656	1700	1700	528	1700	1700	1700	304	721			
Volume to Capacity	0.25	0.38	0.38	0.00	0.30	0.30	0.02	0.06	0.21			
Queue Length 95th (ft)	25	0	0	0	0	0	0	5	19			
Control Delay (s)	12.3	0.0	0.0	11.8	0.0	0.0	0.0	17.6	11.3			
Lane LOS	B			B				C	B			
Approach Delay (s)	1.4			0.0				11.9				
Approach LOS								B				
<b>Intersection Summary</b>												
Average Delay				1.5								
Intersection Capacity Utilization				50.5%			ICU Level of Service			A		
Analysis Period (min)				15								

\* User Entered Value

HCM Unsignalized Intersection Capacity Analysis  
19: US 1 / Overseas & College Rd (E)

5/10/2013



Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations	↑ ↗	↑ ↗	↑ ↗	↗ ↗	↗ ↗	↗ ↗		
Volume (veh/h)	123	1388	755	45	37	74		
Sign Control	Free	Free		Stop				
Grade	0%	0%		0%				
Peak Hour Factor	0.93	0.93	0.79	0.79	0.73	0.73		
Hourly flow rate (vph)	132	1492	956	57	51	101		
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	Raised	Raised						
Median storage veh	1	1						
Upstream signal (ft)								
pX, platoon unblocked								
vC, conflicting volume	1013			1966	478			
vC1, stage 1 conf vol				956				
vC2, stage 2 conf vol				1011				
vCu, unblocked vol	1013			1966	478			
tC, single (s)	4.1			*4.5	*4.5			
tC, 2 stage (s)				3.5				
tF (s)	2.2			3.5	3.3			
p0 queue free %	81			84	86			
cM capacity (veh/h)	680			320	738			
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1	SB 2
Volume Total	132	746	746	478	478	57	51	101
Volume Left	132	0	0	0	0	0	51	0
Volume Right	0	0	0	0	0	57	0	101
cSH	680	1700	1700	1700	1700	1700	320	738
Volume to Capacity	0.19	0.44	0.44	0.28	0.28	0.03	0.16	0.14
Queue Length 95th (ft)	18	0	0	0	0	0	14	12
Control Delay (s)	11.6	0.0	0.0	0.0	0.0	0.0	18.4	10.7
Lane LOS	B					C	B	
Approach Delay (s)	0.9			0.0		13.2		
Approach LOS						B		
Intersection Summary								
Average Delay			1.3					
Intersection Capacity Utilization		48.4%		ICU Level of Service			A	
Analysis Period (min)		15						

\* User Entered Value

# HCM Unsigned Intersection Capacity Analysis

15: 3rd St & US 1 / Overseas

5/10/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑	↖	↖	↑↑	↖	↖		
Volume (veh/h)	1295	17	127	799	12	190		
Sign Control	Free			Free	Stop			
Grade	0%			0%	0%			
Peak Hour Factor	0.88	0.88	0.93	0.93	0.85	0.85		
Hourly flow rate (vph)	1472	19	137	859	14	224		
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	Raised		Raised					
Median storage veh	1		1					
Upstream signal (ft)								
pX, platoon unblocked								
vC, conflicting volume		1491		2174	736			
vC1, stage 1 conf vol				1472				
vC2, stage 2 conf vol				703				
vCu, unblocked vol		1491		2174	736			
tC, single (s)		4.1		*4.5	*4.5			
tC, 2 stage (s)				3.5				
tF (s)		2.2		3.5	3.3			
p0 queue free %		69		95	62			
cM capacity (veh/h)		446		270	595			
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	736	736	19	137	430	430	14	224
Volume Left	0	0	0	137	0	0	14	0
Volume Right	0	0	19	0	0	0	0	224
cSH	1700	1700	1700	446	1700	1700	270	595
Volume to Capacity	0.43	0.43	0.01	0.31	0.25	0.25	0.05	0.38
Queue Length 95th (ft)	0	0	0	32	0	0	4	43
Control Delay (s)	0.0	0.0	0.0	16.6	0.0	0.0	19.1	14.6
Lane LOS				C			C	B
Approach Delay (s)	0.0			2.3			14.9	
Approach LOS							B	
Intersection Summary								
Average Delay	2.1							
Intersection Capacity Utilization	56.2%	ICU Level of Service	B					
Analysis Period (min)	15							

\* User Entered Value

# HCM Signalized Intersection Capacity Analysis

11: MacDonald Ave & US 1 / Overseas

5/10/2013



Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Volume (vph)	1314	427	0	845	398	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	
Lane Util. Factor	0.95	1.00		0.95	0.97	
Fr <sub>t</sub>	1.00	0.85		1.00	1.00	
Flt Protected	1.00	1.00		1.00	0.95	
Satd. Flow (prot)	3539	1583		3539	3433	
Flt Permitted	1.00	1.00		1.00	0.95	
Satd. Flow (perm)	3539	1583		3539	3433	
Peak-hour factor, PHF	0.90	0.90	0.86	0.86	0.86	0.86
Adj. Flow (vph)	1460	474	0	983	463	0
RTOR Reduction (vph)	0	152	0	0	0	0
Lane Group Flow (vph)	1460	322	0	983	463	0
Turn Type	NA	Perm		NA	NA	
Protected Phases	4			8	2	
Permitted Phases		4				
Actuated Green, G (s)	68.0	68.0		68.0	22.0	
Effective Green, g (s)	68.0	68.0		68.0	22.0	
Actuated g/C Ratio	0.68	0.68		0.68	0.22	
Clearance Time (s)	5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	2406	1076		2406	755	
v/s Ratio Prot	c0.41			0.28	c0.13	
v/s Ratio Perm		0.20				
v/c Ratio	0.61	0.30		0.41	0.61	
Uniform Delay, d1	8.7	6.4		7.1	35.2	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	0.7		0.5	3.7	
Delay (s)	9.9	7.1		7.6	38.9	
Level of Service	A	A		A	D	
Approach Delay (s)	9.2			7.6	38.9	
Approach LOS	A			A	D	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		12.8		HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio		0.61				
Actuated Cycle Length (s)		100.0		Sum of lost time (s)	10.0	
Intersection Capacity Utilization		56.0%		ICU Level of Service	B	
Analysis Period (min)		15				
c Critical Lane Group						

## Timings

11: MacDonald Ave & US 1 / Overseas

5/10/2013



Lane Group	EBT	EBR	WBT	NWL
Lane Configurations	↑↑	↑	↑↑	↑↓
Volume (vph)	1314	427	845	398
Turn Type	NA	Perm	NA	NA
Protected Phases	4		8	2
Permitted Phases		4		
Detector Phase	4	4	8	2
Switch Phase				
Minimum Initial (s)	20.0	20.0	20.0	10.0
Minimum Split (s)	68.0	68.0	68.0	22.0
Total Split (s)	73.0	73.0	73.0	27.0
Total Split (%)	73.0%	73.0%	73.0%	27.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	Max	Max
Act Effct Green (s)	68.0	68.0	68.0	22.0
Actuated g/C Ratio	0.68	0.68	0.68	0.22
v/c Ratio	0.61	0.39	0.41	0.61
Control Delay	10.1	1.5	7.7	39.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	10.1	1.5	7.7	39.2
LOS	B	A	A	D
Approach Delay	8.0		7.7	39.2
Approach LOS	A		A	D

### Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0% ), Referenced to phase 2:NWL and 6:, Start of Green

Natural Cycle: 90

Control Type: Pretimed

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 12.2

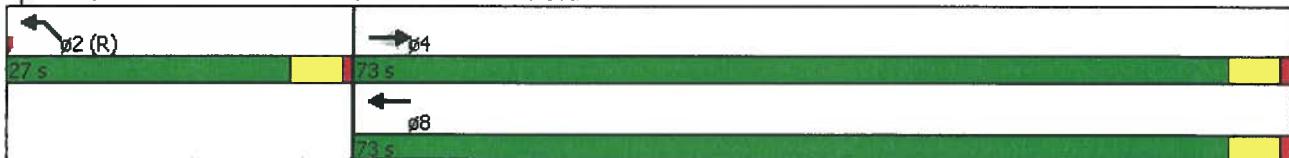
Intersection LOS: B

Intersection Capacity Utilization 56.0%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 11: MacDonald Ave & US 1 / Overseas



# HCM Signalized Intersection Capacity Analysis

## 7: Cross St & US 1 / Overseas

5/10/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↖	↑↑	↘	↙
Volume (vph)	1728	255	37	1134	207	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	
Fr <sub>t</sub>	1.00	0.85	1.00	1.00	0.98	
Flt Protected	1.00	1.00	0.95	1.00	0.96	
Satd. Flow (prot)	3539	1583	1770	3539	1748	
Flt Permitted	1.00	1.00	0.06	1.00	0.96	
Satd. Flow (perm)	3539	1583	110	3539	1748	
Peak-hour factor, PHF	0.90	0.90	0.93	0.93	0.85	0.85
Adj. Flow (vph)	1920	283	40	1219	244	48
RTOR Reduction (vph)	0	91	0	0	7	0
Lane Group Flow (vph)	1920	192	40	1219	285	0
Turn Type	NA	Perm	Perm	NA	NA	
Protected Phases	4			8	2	
Permitted Phases		4	8			
Actuated Green, G (s)	68.0	68.0	68.0	68.0	22.0	
Effective Green, g (s)	68.0	68.0	68.0	68.0	22.0	
Actuated g/C Ratio	0.68	0.68	0.68	0.68	0.22	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	2406	1076	74	2406	384	
v/s Ratio Prot	c0.54			0.34	c0.16	
v/s Ratio Perm		0.12	0.37			
v/c Ratio	0.80	0.18	0.54	0.51	0.74	
Uniform Delay, d1	11.2	5.8	8.1	7.8	36.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.9	0.4	25.5	0.8	12.2	
Delay (s)	14.1	6.2	33.6	8.6	48.6	
Level of Service	B	A	C	A	D	
Approach Delay (s)	13.0			9.4	48.6	
Approach LOS	B			A	D	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		14.6		HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio		0.78				
Actuated Cycle Length (s)		100.0		Sum of lost time (s)		10.0
Intersection Capacity Utilization		70.1%		ICU Level of Service		C
Analysis Period (min)		15				

c Critical Lane Group

## Timings

7: Cross St &amp; US 1 / Overseas

5/10/2013



Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Configurations	↑↑	↗	↖	↑↑	↖
Volume (vph)	1728	255	37	1134	207
Turn Type	NA	Perm	Perm	NA	NA
Protected Phases	4			8	2
Permitted Phases			4	8	
Detector Phase	4	4	8	8	2
Switch Phase					
Minimum Initial (s)	20.0	20.0	20.0	20.0	10.0
Minimum Split (s)	50.0	50.0	50.0	50.0	25.0
Total Split (s)	73.0	73.0	73.0	73.0	27.0
Total Split (%)	73.0%	73.0%	73.0%	73.0%	27.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	Max
Act Effct Green (s)	68.0	68.0	68.0	68.0	22.0
Actuated g/C Ratio	0.68	0.68	0.68	0.68	0.22
v/c Ratio	0.80	0.24	0.54	0.51	0.75
Control Delay	14.5	1.2	40.7	8.7	48.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	14.5	1.2	40.7	8.7	48.5
LOS	B	A	D	A	D
Approach Delay	12.8			9.7	48.5
Approach LOS	B			A	D

## Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0% ), Referenced to phase 2:NBL and 6:, Start of Green

Natural Cycle: 75

Control Type: Pretimed

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 14.5

Intersection LOS: B

Intersection Capacity Utilization 70.1%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 7: Cross St &amp; US 1 / Overseas



HCM Signalized Intersection Capacity Analysis  
4: US 1 / Overseas & College Road (W)

5/10/2013



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑ ↗	↑ ↘	↑ ↗	↗ ↘	↖ ↗	↖ ↘
Volume (vph)	193	1783	1390	27	92	234
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Fr <sub>t</sub>	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.07	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	132	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.93	0.93	0.85	0.85	0.75	0.75
Adj. Flow (vph)	208	1917	1635	32	123	312
RTOR Reduction (vph)	0	0	0	15	0	217
Lane Group Flow (vph)	208	1917	1635	17	123	95
Turn Type	pm+pt	NA	NA	Perm	NA	Perm
Protected Phases	7	4	8		6	
Permitted Phases	4			8		6
Actuated Green, G (s)	72.0	72.0	52.0	52.0	17.0	17.0
Effective Green, g (s)	72.0	72.0	52.0	52.0	17.0	17.0
Actuated g/C Ratio	0.72	0.72	0.52	0.52	0.17	0.17
Clearance Time (s)	4.5	5.0	5.0	5.0	6.0	6.0
Lane Grp Cap (vph)	348	2548	1840	823	300	269
v/s Ratio Prot	0.09	c0.54	c0.46		c0.07	
v/s Ratio Perm	0.34			0.01		0.06
v/c Ratio	0.60	0.75	0.89	0.02	0.41	0.35
Uniform Delay, d <sub>1</sub>	24.9	8.6	21.4	11.6	37.0	36.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d <sub>2</sub>	7.4	2.1	6.9	0.0	4.1	3.6
Delay (s)	32.3	10.7	28.3	11.7	41.1	40.2
Level of Service	C	B	C	B	D	D
Approach Delay (s)		12.8	28.0		40.5	
Approach LOS		B	C		D	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		21.6		HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio		0.78				
Actuated Cycle Length (s)		100.0		Sum of lost time (s)		15.5
Intersection Capacity Utilization		70.4%		ICU Level of Service		C
Analysis Period (min)		15				

c Critical Lane Group

## Timings

4: US 1 / Overseas &amp; College Road (W)

5/10/2013



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑ ↗	↑ ↗	↑ ↗	↗ ↘	↗ ↘	↗ ↘
Volume (vph)	193	1783	1390	27	92	234
Turn Type	pm+pt	NA	NA	Perm	NA	Perm
Protected Phases	7	4	8		6	
Permitted Phases	4			8		6
Detector Phase	7	4	8	8	6	6
Switch Phase						
Minimum Initial (s)	5.0	20.0	20.0	20.0	10.0	10.0
Minimum Split (s)	20.0	57.0	57.0	57.0	23.0	23.0
Total Split (s)	20.0	77.0	57.0	57.0	23.0	23.0
Total Split (%)	20.0%	77.0%	57.0%	57.0%	23.0%	23.0%
Yellow Time (s)	3.5	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	5.0	5.0	5.0	6.0	6.0
Lead/Lag	Lead		Lag		Lag	
Lead-Lag Optimize?	Yes		Yes		Yes	
Recall Mode	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	72.5	72.0	52.0	52.0	17.0	17.0
Actuated g/C Ratio	0.72	0.72	0.52	0.52	0.17	0.17
v/c Ratio	0.60	0.75	0.89	0.04	0.41	0.64
Control Delay	26.1	11.0	28.9	4.6	41.8	14.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.1	11.0	28.9	4.6	41.8	14.9
LOS	C	B	C	A	D	B
Approach Delay		12.5	28.5		22.5	
Approach LOS		B	C		C	

## Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 2: and 6:SBL, Start of Green

Natural Cycle: 100

Control Type: Pretimed

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 19.8

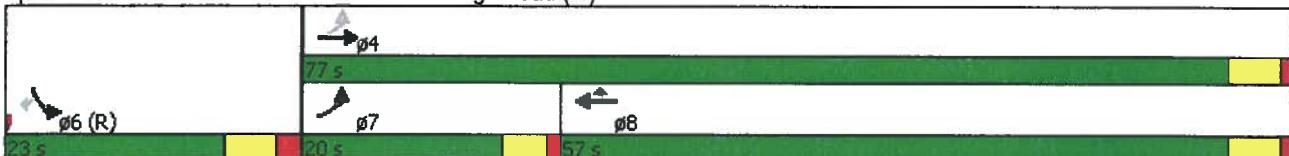
Intersection LOS: B

Intersection Capacity Utilization 70.4%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 4: US 1 / Overseas &amp; College Road (W)



# **Future (2015) Background PM Peak Hour**

## **SYNCHRO Output**

# HCM Unsignalized Intersection Capacity Analysis

23: US 1 / Overseas & Key Haven Rd

5/10/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	2↑		1	2↑	1				1	0	1
Volume (veh/h)	166	1292	0	1	889	25	0	0	0	15	0	128
Sign Control	Free				Free			Stop			Stop	
Grade	0%				0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	180	1404	0	1	966	27	0	0	0	16	0	139
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	Raised			Raised								
Median storage veh	1			1								
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	993			1404			2390	2761	702	2032	2734	483
vC1, stage 1 conf vol							1765	1765		968	968	
vC2, stage 2 conf vol							624	996		1063	1765	
vCu, unblocked vol	993			1404			2390	2761	702	2032	2734	483
tC, single (s)	4.1			4.1			7.5	6.5	6.9	*4.5	6.5	*4.5
tC, 2 stage (s)							6.5	5.5		3.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	74			100			100	100	100	95	100	81
cM capacity (veh/h)	692			482			47	59	380	297	74	738

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	SB 1	SB 2
Volume Total	180	702	702	1	483	483	27	16	139
Volume Left	180	0	0	1	0	0	0	16	0
Volume Right	0	0	0	0	0	0	27	0	139
cSH	692	1700	1700	482	1700	1700	1700	297	738
Volume to Capacity	0.26	0.41	0.41	0.00	0.28	0.28	0.02	0.05	0.19
Queue Length 95th (ft)	26	0	0	0	0	0	0	4	17
Control Delay (s)	12.0	0.0	0.0	12.5	0.0	0.0	0.0	17.8	11.0
Lane LOS	B			B				C	B
Approach Delay (s)	1.4			0.0				11.7	
Approach LOS								B	

## Intersection Summary

Average Delay	1.5
Intersection Capacity Utilization	52.4%
Analysis Period (min)	15

\* User Entered Value

HCM Unsignalized Intersection Capacity Analysis  
19: US 1 / Overseas & College Rd (E)

5/10/2013



Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations	↑ ↗	↑ ↗	↑ ↗	↗ ↘	↗ ↘	↗ ↘		
Volume (veh/h)	130	1465	800	47	39	79		
Sign Control	Free	Free		Stop				
Grade	0%	0%		0%				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Hourly flow rate (vph)	141	1592	870	51	42	86		
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	Raised	Raised						
Median storage veh	1	1						
Upstream signal (ft)								
pX, platoon unblocked								
vC, conflicting volume	921			1948	435			
vC1, stage 1 conf vol				870				
vC2, stage 2 conf vol				1079				
vCu, unblocked vol	921			1948	435			
tC, single (s)	4.1			*4.5	*4.5			
tC, 2 stage (s)				3.5				
tF (s)	2.2			3.5	3.3			
p0 queue free %	81			87	89			
cM capacity (veh/h)	737			320	764			
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1	SB 2
Volume Total	141	796	796	435	435	51	42	86
Volume Left	141	0	0	0	0	0	42	0
Volume Right	0	0	0	0	0	51	0	86
cSH	737	1700	1700	1700	1700	1700	320	764
Volume to Capacity	0.19	0.47	0.47	0.26	0.26	0.03	0.13	0.11
Queue Length 95th (ft)	18	0	0	0	0	0	11	9
Control Delay (s)	11.0	0.0	0.0	0.0	0.0	0.0	18.0	10.3
Lane LOS	B					C	B	
Approach Delay (s)	0.9			0.0			12.8	
Approach LOS							B	
Intersection Summary								
Average Delay	1.2							
Intersection Capacity Utilization	50.5% ICU Level of Service A							
Analysis Period (min)	15							

\* User Entered Value

# HCM Unsignalized Intersection Capacity Analysis

15: 3rd St & US 1 / Overseas

5/10/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑	↖	↖	↑↑	↖	↖		
Volume (veh/h)	1341	65	158	823	57	228		
Sign Control	Free			Free	Stop			
Grade	0%			0%	0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Hourly flow rate (vph)	1458	71	172	895	62	248		
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	Raised		Raised					
Median storage veh	1		1					
Upstream signal (ft)								
pX, platoon unblocked								
vC, conflicting volume		1528		2248	729			
vC1, stage 1 conf vol				1458				
vC2, stage 2 conf vol				791				
vCu, unblocked vol		1528		2248	729			
tC, single (s)		4.1		*4.5	*4.5			
tC, 2 stage (s)				3.5				
tF (s)		2.2		3.5	3.3			
p0 queue free %		60		74	59			
cM capacity (veh/h)		432		241	599			
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	729	729	71	172	447	447	62	248
Volume Left	0	0	0	172	0	0	62	0
Volume Right	0	0	71	0	0	0	0	248
cSH	1700	1700	1700	432	1700	1700	241	599
Volume to Capacity	0.43	0.43	0.04	0.40	0.26	0.26	0.26	0.41
Queue Length 95th (ft)	0	0	0	47	0	0	25	51
Control Delay (s)	0.0	0.0	0.0	18.7	0.0	0.0	25.1	15.2
Lane LOS				C			D	C
Approach Delay (s)	0.0			3.0			17.2	
Approach LOS							C	
<b>Intersection Summary</b>								
Average Delay			2.9					
Intersection Capacity Utilization		59.2%		ICU Level of Service			B	
Analysis Period (min)		15						

\* User Entered Value

HCM Signalized Intersection Capacity Analysis  
11: MacDonald Ave & US 1 / Overseas

5/10/2013



Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations	↑↑	↑		↑↑	↑↑	
Volume (vph)	1408	449	0	915	418	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	
Lane Util. Factor	0.95	1.00		0.95	0.97	
Fr <sub>t</sub>	1.00	0.85		1.00	1.00	
Flt Protected	1.00	1.00		1.00	0.95	
Satd. Flow (prot)	3539	1583		3539	3433	
Flt Permitted	1.00	1.00		1.00	0.95	
Satd. Flow (perm)	3539	1583		3539	3433	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1530	488	0	995	454	0
RTOR Reduction (vph)	0	156	0	0	0	0
Lane Group Flow (vph)	1530	332	0	995	454	0
Turn Type	NA	Perm		NA	NA	
Protected Phases	4			8	2	
Permitted Phases		4				
Actuated Green, G (s)	68.0	68.0		68.0	22.0	
Effective Green, g (s)	68.0	68.0		68.0	22.0	
Actuated g/C Ratio	0.68	0.68		0.68	0.22	
Clearance Time (s)	5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	2406	1076		2406	755	
v/s Ratio Prot	c0.43			0.28	c0.13	
v/s Ratio Perm		0.21				
v/c Ratio	0.64	0.31		0.41	0.60	
Uniform Delay, d1	9.0	6.5		7.1	35.1	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	0.7		0.5	3.5	
Delay (s)	10.3	7.2		7.6	38.6	
Level of Service	B	A		A	D	
Approach Delay (s)	9.6			7.6	38.6	
Approach LOS	A			A	D	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		12.8	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio		0.63				
Actuated Cycle Length (s)		100.0	Sum of lost time (s)		10.0	
Intersection Capacity Utilization		59.2%	ICU Level of Service		B	
Analysis Period (min)		15				
c Critical Lane Group						

## Timings

11: MacDonald Ave & US 1 / Overseas

5/10/2013



Lane Group	EBT	EBR	WBT	NWL
Lane Configurations	↑↑	↗	↑↑	↖
Volume (vph)	1408	449	915	418
Turn Type	NA	Perm	NA	NA
Protected Phases	4		8	2
Permitted Phases		4		
Detector Phase	4	4	8	2
Switch Phase				
Minimum Initial (s)	20.0	20.0	20.0	10.0
Minimum Split (s)	68.0	68.0	68.0	22.0
Total Split (s)	73.0	73.0	73.0	27.0
Total Split (%)	73.0%	73.0%	73.0%	27.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	Max	Max
Act Effect Green (s)	68.0	68.0	68.0	22.0
Actuated g/C Ratio	0.68	0.68	0.68	0.22
v/c Ratio	0.64	0.40	0.41	0.60
Control Delay	10.5	1.5	7.8	38.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	10.5	1.5	7.8	38.9
LOS	B	A	A	D
Approach Delay	8.4		7.8	38.9
Approach LOS	A		A	D

### Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0% ), Referenced to phase 2:NWL and 6:, Start of Green

Natural Cycle: 90

Control Type: Pretimed

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 12.2

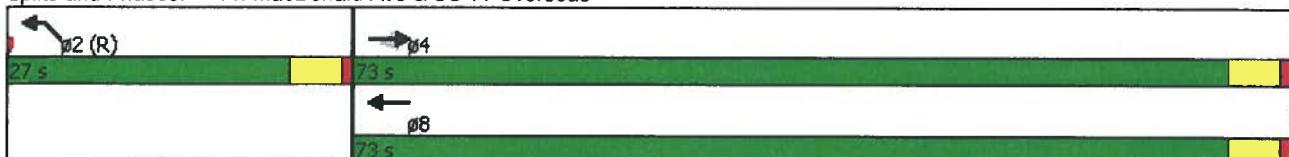
Intersection LOS: B

Intersection Capacity Utilization 59.2%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 11: MacDonald Ave & US 1 / Overseas



# HCM Signalized Intersection Capacity Analysis

## 7: Cross St & US 1 / Overseas

5/10/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↖	↑↑	↘	↖
Volume (vph)	1843	268	39	1218	217	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	
Fr <sub>t</sub>	1.00	0.85	1.00	1.00	0.98	
Flt Protected	1.00	1.00	0.95	1.00	0.96	
Satd. Flow (prot)	3539	1583	1770	3539	1748	
Flt Permitted	1.00	1.00	0.06	1.00	0.96	
Satd. Flow (perm)	3539	1583	110	3539	1748	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2003	291	42	1324	236	47
RTOR Reduction (vph)	0	93	0	0	7	0
Lane Group Flow (vph)	2003	198	42	1324	276	0
Turn Type	NA	Perm	Perm	NA	NA	
Protected Phases	4			8	2	
Permitted Phases		4	8			
Actuated Green, G (s)	68.0	68.0	68.0	68.0	22.0	
Effective Green, g (s)	68.0	68.0	68.0	68.0	22.0	
Actuated g/C Ratio	0.68	0.68	0.68	0.68	0.22	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	2406	1076	74	2406	384	
v/s Ratio Prot	c0.57			0.37	c0.16	
v/s Ratio Perm		0.12	0.38			
v/c Ratio	0.83	0.18	0.57	0.55	0.72	
Uniform Delay, d1	11.8	5.9	8.3	8.2	36.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.6	0.4	27.9	0.9	11.0	
Delay (s)	15.4	6.2	36.3	9.1	47.2	
Level of Service	B	A	D	A	D	
Approach Delay (s)	14.2			9.9	47.2	
Approach LOS	B			A	D	
<b>Intersection Summary</b>						
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service			B	
HCM 2000 Volume to Capacity ratio	0.80					
Actuated Cycle Length (s)	100.0	Sum of lost time (s)			10.0	
Intersection Capacity Utilization	73.9%	ICU Level of Service			D	
Analysis Period (min)	15					
c Critical Lane Group						

## Timings

### 7: Cross St & US 1 / Overseas

5/10/2013



Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Configurations	↑↑	↑	↑	↑↑	↑↑
Volume (vph)	1843	268	39	1218	217
Turn Type	NA	Perm	Perm	NA	NA
Protected Phases	4			8	2
Permitted Phases		4	8		
Detector Phase	4	4	8	8	2
Switch Phase					
Minimum Initial (s)	20.0	20.0	20.0	20.0	10.0
Minimum Split (s)	50.0	50.0	50.0	50.0	25.0
Total Split (s)	73.0	73.0	73.0	73.0	27.0
Total Split (%)	73.0%	73.0%	73.0%	73.0%	27.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	Max
Act Effect Green (s)	68.0	68.0	68.0	68.0	22.0
Actuated g/C Ratio	0.68	0.68	0.68	0.68	0.22
v/c Ratio	0.83	0.25	0.57	0.55	0.72
Control Delay	15.9	1.2	43.7	9.3	47.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	15.9	1.2	43.7	9.3	47.0
LOS	B	A	D	A	D
Approach Delay	14.0			10.3	47.0
Approach LOS	B			B	D

#### Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green

Natural Cycle: 75

Control Type: Pretimed

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 15.1

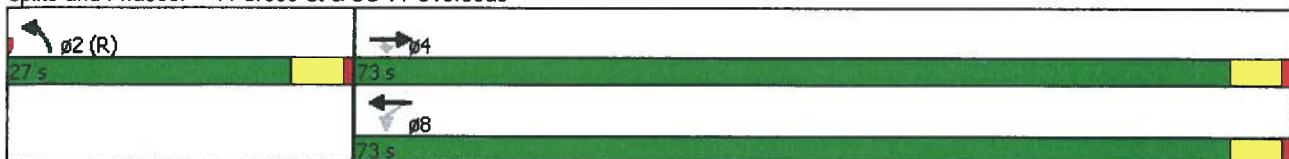
Intersection LOS: B

Intersection Capacity Utilization 73.9%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 7: Cross St & US 1 / Overseas



HCM Signalized Intersection Capacity Analysis  
4: US 1 / Overseas & College Road (W)

5/10/2013



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑ ↗	↑ ↘	↑ ↗	↑ ↘	↑ ↗	↑ ↘
Volume (vph)	203	1899	1486	29	98	246
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Fr <sub>t</sub>	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.07	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	132	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	221	2064	1615	32	107	267
RTOR Reduction (vph)	0	0	0	15	0	218
Lane Group Flow (vph)	221	2064	1615	17	107	49
Turn Type	pm+pt	NA	NA	Perm	NA	Perm
Protected Phases	7	4	8		6	
Permitted Phases	4			8		6
Actuated Green, G (s)	72.0	72.0	52.0	52.0	17.0	17.0
Effective Green, g (s)	72.0	72.0	52.0	52.0	17.0	17.0
Actuated g/C Ratio	0.72	0.72	0.52	0.52	0.17	0.17
Clearance Time (s)	4.5	5.0	5.0	5.0	6.0	6.0
Lane Grp Cap (vph)	348	2548	1840	823	300	269
v/s Ratio Prot	0.10	c0.58	c0.46		c0.06	
v/s Ratio Perm	0.36			0.01		0.03
v/c Ratio	0.64	0.81	0.88	0.02	0.36	0.18
Uniform Delay, d <sub>1</sub>	25.7	9.4	21.2	11.6	36.7	35.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d <sub>2</sub>	8.6	2.9	6.3	0.0	3.3	1.5
Delay (s)	34.3	12.3	27.5	11.7	40.0	37.0
Level of Service	C	B	C	B	D	D
Approach Delay (s)		14.4	27.2		37.9	
Approach LOS		B	C		D	

Intersection Summary

HCM 2000 Control Delay	21.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

## Timings

### 4: US 1 / Overseas & College Road (W)

5/10/2013



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑	↑↑	↑↑	↑	↑	↑
Volume (vph)	203	1899	1486	29	98	246
Turn Type	pm+pt	NA	NA	Perm	NA	Perm
Protected Phases	7	4	8		6	
Permitted Phases	4			8		6
Detector Phase	7	4	8	8	6	6
Switch Phase						
Minimum Initial (s)	5.0	20.0	20.0	20.0	10.0	10.0
Minimum Split (s)	20.0	57.0	57.0	57.0	23.0	23.0
Total Split (s)	20.0	77.0	57.0	57.0	23.0	23.0
Total Split (%)	20.0%	77.0%	57.0%	57.0%	23.0%	23.0%
Yellow Time (s)	3.5	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	5.0	5.0	5.0	6.0	6.0
Lead/Lag	Lead		Lag		Lag	
Lead-Lag Optimize?	Yes		Yes		Yes	
Recall Mode	Max	Max	Max	Max	Max	Max
Act Effect Green (s)	72.5	72.0	52.0	52.0	17.0	17.0
Actuated g/C Ratio	0.72	0.72	0.52	0.52	0.17	0.17
v/c Ratio	0.63	0.81	0.88	0.04	0.36	0.55
Control Delay	28.4	12.8	28.1	4.6	40.6	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.4	12.8	28.1	4.6	40.6	9.7
LOS	C	B	C	A	D	A
Approach Delay		14.3	27.7		18.5	
Approach LOS		B	C		B	

#### Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 2: and 6:SBL, Start of Green

Natural Cycle: 100

Control Type: Pretimed

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 19.8

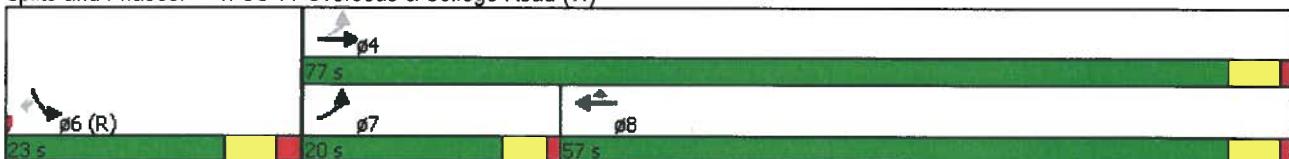
Intersection LOS: B

Intersection Capacity Utilization 73.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 4: US 1 / Overseas & College Road (W)



**Future (2015) Total PM Peak Hour  
SYNCHRO Output**

# HCM Unsignalized Intersection Capacity Analysis

23: US 1 / Overseas & Key Haven Rd

5/17/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑	↑↑	↑↑				↑		↑↑
Volume (veh/h)	166	1297	0	1	902	25	0	0	0	15	0	128
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	180	1410	0	1	980	27	0	0	0	16	0	139
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		Raised			Raised							
Median storage veh		1				1						
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1008			1410			2402	2780	705	2048	2753	490
vC1, stage 1 conf vol							1771	1771		983	983	
vC2, stage 2 conf vol							632	1010		1066	1771	
vCu, unblocked vol	1008			1410			2402	2780	705	2048	2753	490
tC, single (s)	4.1			4.1			7.5	6.5	6.9	*4.5	6.5	*4.5
tC, 2 stage (s)							6.5	5.5		3.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	74			100			100	100	100	94	100	81
cM capacity (veh/h)	683			480			46	58	379	294	73	734
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	SB 1	SB 2			
Volume Total	180	705	705	1	490	490	27	16	139			
Volume Left	180	0	0	1	0	0	0	16	0			
Volume Right	0	0	0	0	0	0	27	0	139			
cSH	683	1700	1700	480	1700	1700	1700	294	734			
Volume to Capacity	0.26	0.41	0.41	0.00	0.29	0.29	0.02	0.06	0.19			
Queue Length 95th (ft)	26	0	0	0	0	0	0	4	17			
Control Delay (s)	12.1	0.0	0.0	12.5	0.0	0.0	0.0	17.9	11.0			
Lane LOS	B			B				C	B			
Approach Delay (s)	1.4			0.0				11.8				
Approach LOS								B				
<b>Intersection Summary</b>												
Average Delay				1.5								
Intersection Capacity Utilization				52.5%			ICU Level of Service			A		
Analysis Period (min)				15								

\* User Entered Value

# HCM Unsignalized Intersection Capacity Analysis

19: US 1 / Overseas & College Rd (E)

5/17/2013



Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations	↑ ↗	↑ ↗	↑ ↗	↗ ↘	↗ ↘	↗ ↘		
Volume (veh/h)	130	1470	813	47	39	79		
Sign Control	Free	Free		Stop				
Grade	0%	0%		0%				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Hourly flow rate (vph)	141	1598	884	51	42	86		
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	Raised	Raised						
Median storage veh	1	1						
Upstream signal (ft)								
pX, platoon unblocked								
vC, conflicting volume	935			1965	442			
vC1, stage 1 conf vol				884				
vC2, stage 2 conf vol				1082				
vCu, unblocked vol	935			1965	442			
tC, single (s)	4.1			*4.5	*4.5			
tC, 2 stage (s)				3.5				
tF (s)	2.2			3.5	3.3			
p0 queue free %	81			87	89			
cM capacity (veh/h)	728			317	760			
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1	SB 2
Volume Total	141	799	799	442	442	51	42	86
Volume Left	141	0	0	0	0	0	42	0
Volume Right	0	0	0	0	0	51	0	86
cSH	728	1700	1700	1700	1700	1700	317	760
Volume to Capacity	0.19	0.47	0.47	0.26	0.26	0.03	0.13	0.11
Queue Length 95th (ft)	18	0	0	0	0	0	11	10
Control Delay (s)	11.1	0.0	0.0	0.0	0.0	0.0	18.1	10.3
Lane LOS	B					C	B	
Approach Delay (s)	0.9			0.0			12.9	
Approach LOS							B	
Intersection Summary								
Average Delay	1.2							
Intersection Capacity Utilization	50.6%				ICU Level of Service			
Analysis Period (min)	15							

\* User Entered Value

# HCM Unsignalized Intersection Capacity Analysis

15: 3rd St & US 1 / Overseas

5/17/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑	↗	↖	↑↑	↖	↗		
Volume (veh/h)	1341	65	171	823	57	233		
Sign Control	Free			Free	Stop			
Grade	0%			0%	0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Hourly flow rate (vph)	1458	71	186	895	62	253		
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	Raised		Raised					
Median storage veh	1		1					
Upstream signal (ft)								
pX, platoon unblocked								
vC, conflicting volume		1528		2277	729			
vC1, stage 1 conf vol				1458				
vC2, stage 2 conf vol				819				
vCu, unblocked vol		1528		2277	729			
tC, single (s)		4.1		*4.5	*4.5			
tC, 2 stage (s)				3.5				
tF (s)		2.2		3.5	3.3			
p0 queue free %		57		73	58			
cM capacity (veh/h)		432		229	599			
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	729	729	71	186	447	447	62	253
Volume Left	0	0	0	186	0	0	62	0
Volume Right	0	0	71	0	0	0	0	253
cSH	1700	1700	1700	432	1700	1700	229	599
Volume to Capacity	0.43	0.43	0.04	0.43	0.26	0.26	0.27	0.42
Queue Length 95th (ft)	0	0	0	53	0	0	26	52
Control Delay (s)	0.0	0.0	0.0	19.5	0.0	0.0	26.4	15.3
Lane LOS				C			D	C
Approach Delay (s)	0.0			3.4			17.5	
Approach LOS							C	
Intersection Summary								
Average Delay		3.1						
Intersection Capacity Utilization		59.9%		ICU Level of Service			B	
Analysis Period (min)		15						

\* User Entered Value

HCM Signalized Intersection Capacity Analysis  
11: MacDonald Ave & US 1 / Overseas

5/17/2013



Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations	↑↑	↑	↑↑	↑↑	↑↑	
Volume (vph)	1408	496	0	915	436	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	
Lane Util. Factor	0.95	1.00		0.95	0.97	
Fr <sub>t</sub>	1.00	0.85		1.00	1.00	
Flt Protected	1.00	1.00		1.00	0.95	
Satd. Flow (prot)	3539	1583		3539	3433	
Flt Permitted	1.00	1.00		1.00	0.95	
Satd. Flow (perm)	3539	1583		3539	3433	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1530	539	0	995	474	0
RTOR Reduction (vph)	0	172	0	0	0	0
Lane Group Flow (vph)	1530	367	0	995	474	0
Turn Type	NA	Perm		NA	NA	
Protected Phases	4			8	2	
Permitted Phases		4				
Actuated Green, G (s)	68.0	68.0		68.0	22.0	
Effective Green, g (s)	68.0	68.0		68.0	22.0	
Actuated g/C Ratio	0.68	0.68		0.68	0.22	
Clearance Time (s)	5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	2406	1076		2406	755	
v/s Ratio Prot	c0.43			0.28	c0.14	
v/s Ratio Perm		0.23				
v/c Ratio	0.64	0.34		0.41	0.63	
Uniform Delay, d1	9.0	6.7		7.1	35.3	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	0.9		0.5	3.9	
Delay (s)	10.3	7.5		7.6	39.2	
Level of Service	B	A		A	D	
Approach Delay (s)	9.6			7.6	39.2	
Approach LOS	A			A	D	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		13.0	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio		0.63				
Actuated Cycle Length (s)		100.0	Sum of lost time (s)		10.0	
Intersection Capacity Utilization		59.7%	ICU Level of Service		B	
Analysis Period (min)		15				
c Critical Lane Group						

## Timings

11: MacDonald Ave & US 1 / Overseas

5/17/2013



Lane Group	EBT	EBR	WBT	NWL
Lane Configurations	↑↑	↗	↑↑	↖↖
Volume (vph)	1408	496	915	436
Turn Type	NA	Perm	NA	NA
Protected Phases	4		8	2
Permitted Phases		4		
Detector Phase	4	4	8	2
Switch Phase				
Minimum Initial (s)	20.0	20.0	20.0	10.0
Minimum Split (s)	68.0	68.0	68.0	22.0
Total Split (s)	73.0	73.0	73.0	27.0
Total Split (%)	73.0%	73.0%	73.0%	27.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	Max	Max
Act Effct Green (s)	68.0	68.0	68.0	22.0
Actuated g/C Ratio	0.68	0.68	0.68	0.22
v/c Ratio	0.64	0.43	0.41	0.63
Control Delay	10.5	1.7	7.8	39.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	10.5	1.7	7.8	39.6
LOS	B	A	A	D
Approach Delay	8.2		7.8	39.6
Approach LOS	A		A	D

### Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0% ), Referenced to phase 2:NWL and 6:, Start of Green

Natural Cycle: 90

Control Type: Pretimed

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 12.3

Intersection LOS: B

Intersection Capacity Utilization 59.7%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 11: MacDonald Ave & US 1 / Overseas



HCM Signalized Intersection Capacity Analysis  
7: Cross St & US 1 / Overseas

5/17/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↖	↑↑	↘	↖
Volume (vph)	1890	268	39	1236	217	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	
Frt	1.00	0.85	1.00	1.00	0.98	
Flt Protected	1.00	1.00	0.95	1.00	0.96	
Satd. Flow (prot)	3539	1583	1770	3539	1748	
Flt Permitted	1.00	1.00	0.06	1.00	0.96	
Satd. Flow (perm)	3539	1583	110	3539	1748	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2054	291	42	1343	236	47
RTOR Reduction (vph)	0	93	0	0	7	0
Lane Group Flow (vph)	2054	198	42	1343	276	0
Turn Type	NA	Perm	Perm	NA	NA	
Protected Phases	4			8	2	
Permitted Phases		4	8			
Actuated Green, G (s)	68.0	68.0	68.0	68.0	22.0	
Effective Green, g (s)	68.0	68.0	68.0	68.0	22.0	
Actuated g/C Ratio	0.68	0.68	0.68	0.68	0.22	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	2406	1076	74	2406	384	
v/s Ratio Prot	c0.58			0.38	c0.16	
v/s Ratio Perm		0.12	0.38			
v/c Ratio	0.85	0.18	0.57	0.56	0.72	
Uniform Delay, d1	12.2	5.9	8.3	8.3	36.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.1	0.4	27.9	0.9	11.0	
Delay (s)	16.3	6.2	36.3	9.2	47.2	
Level of Service	B	A	D	A	D	
Approach Delay (s)	15.1			10.0	47.2	
Approach LOS	B			B	D	
<b>Intersection Summary</b>						
HCM 2000 Control Delay	15.6			HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.82					
Actuated Cycle Length (s)	100.0			Sum of lost time (s)	10.0	
Intersection Capacity Utilization	75.2%			ICU Level of Service	D	
Analysis Period (min)	15					

c Critical Lane Group

## Timings

### 7: Cross St & US 1 / Overseas

5/17/2013



Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Configurations	↑↑	↑	↑↑	↑↑	↑
Volume (vph)	1890	268	39	1236	217
Turn Type	NA	Perm	Perm	NA	NA
Protected Phases	4			8	2
Permitted Phases			4	8	
Detector Phase	4	4	8	8	2
Switch Phase					
Minimum Initial (s)	20.0	20.0	20.0	20.0	10.0
Minimum Split (s)	50.0	50.0	50.0	50.0	25.0
Total Split (s)	73.0	73.0	73.0	73.0	27.0
Total Split (%)	73.0%	73.0%	73.0%	73.0%	27.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	Max
Act Effct Green (s)	68.0	68.0	68.0	68.0	22.0
Actuated g/C Ratio	0.68	0.68	0.68	0.68	0.22
v/c Ratio	0.85	0.25	0.57	0.56	0.72
Control Delay	16.9	1.2	43.7	9.4	47.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	16.9	1.2	43.7	9.4	47.0
LOS	B	A	D	A	D
Approach Delay	14.9			10.4	47.0
Approach LOS	B			B	D

#### Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0% ), Referenced to phase 2:NBL and 6:, Start of Green

Natural Cycle: 75

Control Type: Pretimed

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 15.6

Intersection LOS: B

Intersection Capacity Utilization 75.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 7: Cross St & US 1 / Overseas



# HCM Signalized Intersection Capacity Analysis

4: US 1 / Overseas & College Road (W)

5/17/2013



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	1	2	2	1	1	1
Volume (vph)	203	1946	1504	29	98	246
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.07	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	132	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	221	2115	1635	32	107	267
RTOR Reduction (vph)	0	0	0	15	0	217
Lane Group Flow (vph)	221	2115	1635	17	107	50
Turn Type	pm+pt	NA	NA	Perm	NA	Perm
Protected Phases	7	4	8		6	
Permitted Phases	4			8		6
Actuated Green, G (s)	72.0	72.0	52.0	52.0	17.0	17.0
Effective Green, g (s)	72.0	72.0	52.0	52.0	17.0	17.0
Actuated g/C Ratio	0.72	0.72	0.52	0.52	0.17	0.17
Clearance Time (s)	4.5	5.0	5.0	5.0	6.0	6.0
Lane Grp Cap (vph)	348	2548	1840	823	300	269
v/s Ratio Prot	0.10	c0.60	c0.46		c0.06	
v/s Ratio Perm	0.36			0.01		0.03
v/c Ratio	0.64	0.83	0.89	0.02	0.36	0.18
Uniform Delay, d1	25.9	9.7	21.4	11.6	36.7	35.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.6	3.3	6.9	0.0	3.3	1.5
Delay (s)	34.5	13.1	28.3	11.7	40.0	37.1
Level of Service	C	B	C	B	D	D
Approach Delay (s)		15.1	28.0		37.9	
Approach LOS		B	C		D	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		21.9	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio		0.79				
Actuated Cycle Length (s)		100.0	Sum of lost time (s)		15.5	
Intersection Capacity Utilization		74.1%	ICU Level of Service		D	
Analysis Period (min)		15				
c Critical Lane Group						

## Timings

4: US 1 / Overseas & College Road (W)

5/17/2013



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑	↑↑	↑↑	↑	↑	↑
Volume (vph)	203	1946	1504	29	98	246
Turn Type	pm+pt	NA	NA	Perm	NA	Perm
Protected Phases	7	4	8		6	
Permitted Phases	4			8		6
Detector Phase	7	4	8	8	6	6
Switch Phase						
Minimum Initial (s)	5.0	20.0	20.0	20.0	10.0	10.0
Minimum Split (s)	20.0	57.0	57.0	57.0	23.0	23.0
Total Split (s)	20.0	77.0	57.0	57.0	23.0	23.0
Total Split (%)	20.0%	77.0%	57.0%	57.0%	23.0%	23.0%
Yellow Time (s)	3.5	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	5.0	5.0	5.0	6.0	6.0
Lead/Lag	Lead		Lag		Lag	
Lead-Lag Optimize?	Yes		Yes		Yes	
Recall Mode	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	72.5	72.0	52.0	52.0	17.0	17.0
Actuated g/C Ratio	0.72	0.72	0.52	0.52	0.17	0.17
v/c Ratio	0.63	0.83	0.89	0.04	0.36	0.55
Control Delay	28.4	13.5	28.9	4.6	40.6	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.4	13.5	28.9	4.6	40.6	9.8
LOS	C	B	C	A	D	A
Approach Delay		14.9	28.5		18.6	
Approach LOS		B	C		B	

### Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0% ), Referenced to phase 2: and 6:SBL, Start of Green

Natural Cycle: 100

Control Type: Pretimed

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 20.4

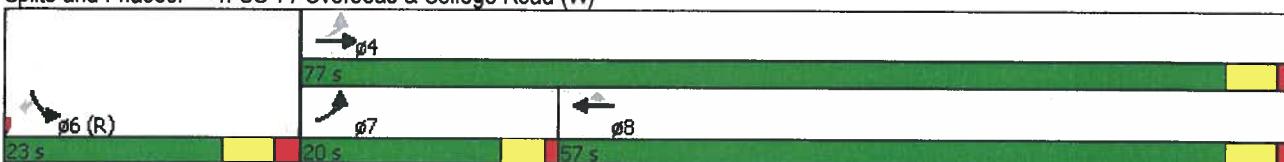
Intersection LOS: C

Intersection Capacity Utilization 74.1%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 4: US 1 / Overseas & College Road (W)



## **Appendix J**

### **Monroe County Level of Service and Reserve Capacity Table**

## 2012 LEVEL OF SERVICE AND RESERVE CAPACITY

SEGMENT	LENGTH (miles)	FACILITY TYPE	POSTED SPEED LIMITS (mph)	AVERAGE SIGNAL (mph)	ADJ. FOR LOS C CRITERIA (mph)	ADJUSTED MEDIAN TRAVEL SPEED (mph)	LOS	RESERVE SPEED (mph)	2012		2011	
									MAXIMUM RESERVE VOLUME (trips)	5% ALLOCATION BELOW LOS C (trips)	MAXIMUM RESERVE VOLUME (trips)	5% ALLOCATION BELOW LOS C (trips)
1 Stock Island (4.0 - 5.0)	1.1	4-L/D	30/35/45	38.3	N/A	22.0	B	10.0	1,822	N/A	2,131	N/A
2 Boca Chica (5.0- 9.0)	3.9	4-L/D	55/45	54.1	N/A	49.6	A	7.4	4,779	N/A	5,683	N/A
3 Big Coppit (9.0- 10.5)	1.5	2-L/U	45/55	48.3	N/A	43.8	C	1.5	373	N/A	522	N/A
4 Saddlebunch (10.5- 16.5)	5.8	2-L/U	45/55	54.1	N/A	49.6	B	3.0	2,881	N/A	3,074	N/A
5 Sugarloaf (16.5- 20.5)	3.9	2-L/U	45/55	52.1	4.2	43.4	C	3.0	1,938	N/A	2,131	N/A
6 Cudjoe (20.5- 23.0)	2.5	2-L/U	45/55	45.5	N/A	41.0	B	4.4	1,822	N/A	2,401	N/A
7 Summerland (23.0- 25.0)	2.2	2-L/U	45	45.0	N/A	40.5	B	4.2	1,530	N/A	2,004	N/A
8 Ramrod (25.0- 27.5)	2.3	2-L/U	45	45.0	N/A	40.5	B	5.3	2,019	N/A	2,247	N/A
9 Torch (27.5- 29.5)	2.1	2-L/U	45	45.0	N/A	40.5	A	6.9	2,400	N/A	2,608	N/A
10 Big Pine (29.5- 33.0)	3.4	2-L/U	45	45.0	3.4	37.1	C	2.1	1,182	N/A	845	N/A
11 Bahia Honda (33.0- 40.0)	7.0	2-L/U (70%) 4-L/D (30%)	45/50/55	52.1	N/A	47.6	B	5.9	6,839	N/A	6,723	N/A
12 7-Mile Bridge (40.0- 47.0)	6.8	2-L/U	55	55.0	N/A	50.5	C	3.0	3,378	N/A	5,180	N/A
13 Marathon (47.0- 54.0)	7.3	2-L/U (13%) 4-L/D (87%)	35/45	42.2	N/A	22	A	14.7	17,771	N/A	17,408	N/A
14 Grassy (54.0- 60.5)	6.4	2-L/U	45/55	54.4	1.5	48.4	C	2.6	2,756	N/A	3,074	0
15 Duck (60.5- 63.0)	2.7	2-L/U	55	55.0	N/A	50.5	C	2.5	1,118	N/A	1,431	N/A
16 Long (63.0- 73.0)	9.9	2-L/U	55/45	53.5	N/A	49	B	3.6	5,902	N/A	5,246	N/A
17 L Matecumbe (73.0- 77.5)	4.5	2-L/U	55	55.0	N/A	50.5	D	-1.3	(969)	950	(671)	1196
18 Tea Table (77.5- 79.5)	2.2	2-L/U	55/45	54.6	N/A	50.1	E	-4.9	(1,785)	0	(328)	571
19 U Matecumbe (79.5- 84.0)	4.1	2-L/U	45	45.0	N/A	40.5	C	0.2	136	N/A	951	N/A
20 Windley (84.0- 86.0)	1.9	2-L/U	45	45.0	N/A	40.5	C	0.8	252	N/A	692	N/A
21 Plantation (86.0- 91.5)	5.8	2-L/U	45	45.0	3.7	36.8	B	5.1	4,898	N/A	4,418	N/A
22 Tavernier (91.5- 99.5)	8.0	4-L/D	45/50	47.1	2.1	40.5	A	8.2	10,863	N/A	11,128	N/A
23 Key Largo (99.5- 106.0)	6.8	4-L/D	35/45/55	44.4	3.6	36.3	A	10.6	11,936	N/A	9,234	N/A
24 Cross (106.0- 112.5)	6.2	2-L/U	35/45/55	48.2	N/A	43.7	A	8.5	8,727	N/A	8,932	N/A
Overall	108.3					45.0	C	2.0	37,094			